Chapter 2.0
Project Alternatives

2.1 INTRODUCTION

This chapter provides a description of the Project alternatives relative to the phases of the proposed development during Construction, Operations, and Reclamation including the Proposed Action Alternative, the BLM Mitigation Alternative, and the No Action Alternative. Alternatives that were considered but eliminated from further consideration are also described in this chapter. In developing the alternatives, the BLM followed guidance set forth in the BLM-NEPA Handbook (H-1790-1), which provides for the development of a range of reasonable alternatives. Based on this guidance, the BLM developed the following alternatives for analysis in this EIS.

- The Proposed Action Alternative describes the proposed development and activities during Construction, Operations, and Reclamation described by Energy Fuels in the Plan of Operations including on-site processing or off-site processing (Energy Fuels, 2013a). The Plan of Operations is available on the Project website for more information: http//www.blm.gov/wy/st/en/info/NEPA/documents/lfo/sheepmtn/html. The action is described in Section 2.3.
- The BLM Mitigation Alternative consists of the Plan of Operations (the Proposed Action Alternative) with certain modifications of the Plan and additional mitigation measures with an emphasis on environmental resource conservation. The alternative is described in Section 2.4.
- The No Action Alternative assumes that approval of Energy Fuels' Sheep Mountain Uranium Project is denied, and existing infrastructure would be removed as required by existing permits, which include reclamation bonds. This alternative is discussed in Section 2.5.

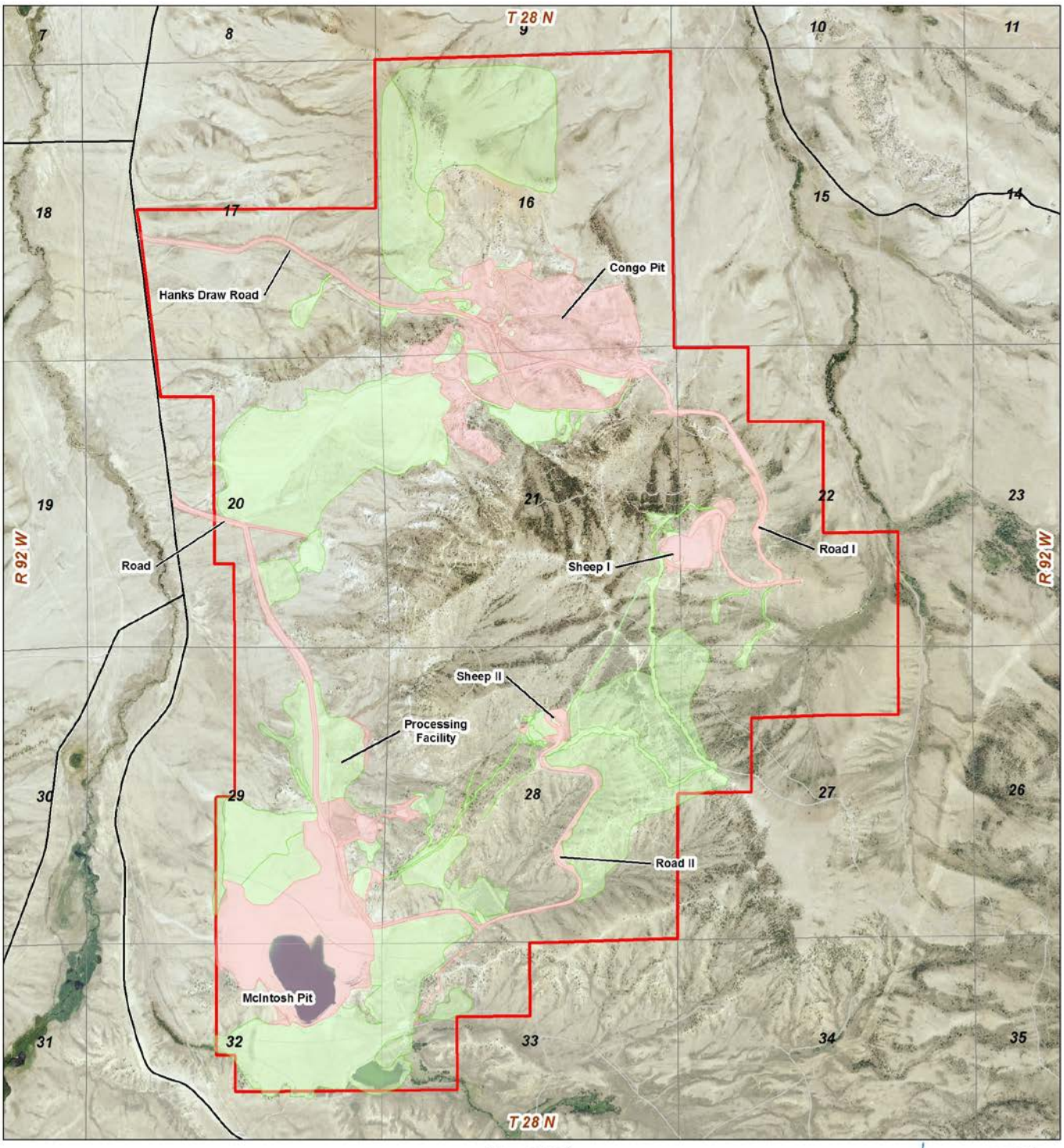
The No Action Alternative and each of the Action Alternatives are discussed in terms of alternative-specific activities, alternative-specific design features, and surface disturbance summaries. Alternatives considered but eliminated from detailed analysis are discussed in Section 2.6. Section 2.7 is a comparison of the alternatives analyzed in this EIS.

2.2 LOCATION AND HISTORY

2.2.1 Project Location

The Sheep Mountain Uranium Project is located approximately 8 road miles south of Jeffrey City, Wyoming in Fremont County, Township 28 North, Range 92 West, Sections 16, 17, 20, 21, 22, 27, 28, 29, 32, and 33, 6th Principal Meridian. The Project Area lies approximately 62 road miles southeast of Riverton, approximately 67 road miles north of Rawlins, and approximately 105 road miles southwest of Casper, and is located on Jeffrey City and Crooks Peak USGS 7.5-minute topographic quadrangles. The general location is shown on Map 1.1-1 in Chapter 1, and the Project Area is shown on Map 2.2-1.

The primary access to the Sheep Mountain Uranium Project is along the Crooks Gap Road (Fremont County Road - CR 318). From US Highway 287 at Jeffrey City, the primary access gate is reached by traveling south on the Crooks Gap Road for approximately 8 miles. Though this is the primary access, the site can also be accessed from the south via Bairoil Road (Sweetwater CR 4-22) or Minerals Exploration Road (Sweetwater CR 4-63) and travelling north on Wamsutter Road (Sweetwater CR 4-23) and Crooks Gap Road (see Map 1.1-1 in Chapter 1).



Map 2.2-1
Existing Disturbance

Sheep Mountain Project Area
Existing Disturbance (419.7 acres)
Reclaimed Disturbance (891.7 acres)

N

0 1,000 2,000 3,000 Feet

No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM

2.2.2 History of Mining at Sheep Mountain

2.2.2.1 Mining History

Uranium was first discovered in the Crooks Gap-Green Mountain Mining District which includes Sheep Mountain, in 1953 (Energy Fuels, 2014a). Development and claim staking rapidly followed. Western Nuclear Inc. (Western Nuclear) built the Split Rock Mill near Jeffrey City in 1957 which produced approximately 27 million pounds of uranium oxide (U_3O_8) or "yellowcake" over its operating life. Ores from earlier mining in the district were transported by truck to the Atomic Energy Commission buying station in Riverton, Wyoming. It is estimated that 20 million pounds of uranium has been mined from within the Sheep Mountain Project Area.

Several mining companies have owned and operated mines on Sheep Mountain since the start of commercial production in 1957. Continental Materials, Inc. operated the Seismic Open Pit and Reserve shaft during the late 1950s and early 1960s but sold their holdings to Western Nuclear in 1972. Phelps Dodge Corporation developed and operated the Ravine and Congo inclines during the early 1960's. Western Nuclear developed and operated the Paydirt Open Pit, Golden Goose I Shaft, and Heald Open Pit during the 1960s.

In 1971, Phelps Dodge Corporation purchased Western Nuclear, and from that point on, mining on Sheep Mountain was carried out solely by Western Nuclear, a wholly owned subsidiary of Phelps Dodge Corporation.

Western Nuclear conducted extensive mining operations at Sheep Mountain in the 1970s including the Sheep I and II shafts, Golden Goose II Shaft, Sun Heald and McIntosh NE Underground Mines, and the McIntosh Open Pit. Western Nuclear ceased production in the area in 1982. In 1987, Pathfinder Mines Corp. held an option on the property and produced limited tonnage from the Sheep I Shaft. U.S. Energy-Crested Corp. (USECC) acquired the properties from Western Nuclear in 1988 and completed some mine development through 2000. Since 2000, no mining has occurred and dewatering of the open pits and underground mines ceased. Without continual dewatering, the underground workings below the water table and the lower portion of the McIntosh Pit flooded. Although no mining has occurred since 2000, there have been changes in mine ownership.

In December 2004, Uranium Power Corp. (UPC, then known as Bell Coast Capital) entered into a Purchase and Sales Agreement with USECC to acquire a 50 percent interest in the Sheep Mountain property. USECC sold the remainder of its uranium assets, including its 50 percent interest in Sheep Mountain to Uranium One Ventures USA Inc. in April 2007.

Titan Uranium Inc. acquired Uranium Power Corp's 50 percent interest in the property when it acquired UPC by a Plan of Arrangement in July 2009. The ownership was subsequently transferred to its wholly owned subsidiary, Titan Uranium USA Inc. The remaining 50 percent interest was purchased from Uranium One Ventures USA on October 1, 2009.

On February 29, 2012, Energy Fuels Inc. acquired Titan Uranium Inc., after which point Titan Uranium Inc. and all of its subsidiaries, including Titan Uranium USA Inc., became wholly-owned subsidiaries of Energy Fuels Inc. Later in 2012, Titan Uranium USA Inc., the operator of the Sheep Mountain Uranium Project, was renamed Energy Fuels Wyoming Inc. On August 27, 2013, Energy Fuels Resources (USA) Inc. submitted a Notification of Change of Operator for the Project from Energy Fuels Wyoming Inc. to Energy Fuels Resources (USA) Inc. (Energy Fuels, 2013a). Energy Fuels Wyoming Inc. continues to hold the project's claims, property, and other assets.

2.2.2.2 Reclamation History

While mining at Sheep Mountain began in the 1950s, the first mine reclamation requirements in Wyoming were implemented in 1969 through the Open Cut Reclamation Act. Subsequently, in 1973, the Wyoming Environmental Quality Act was enacted and in 1975, the first rules and regulations were promulgated under the 1973 Act. Operations conducted prior to the Open Cut Reclamation Act did not carry any mining company reclamation responsibilities. The WDEQ Abandoned Mine Lands (AML) has conducted reclamation on mines in the area for which there is no reclamation obligation and has plans for additional efforts in the future including the McIntosh Pit as described in Chapter 5.

Mine operations at Sheep Mountain were initially licensed under the 1969 Open Cut Reclamation Act and later permitted under the 1973 Act with the issuance of WDEQ-LQD Permit to Mine No. 381C, which remains active.

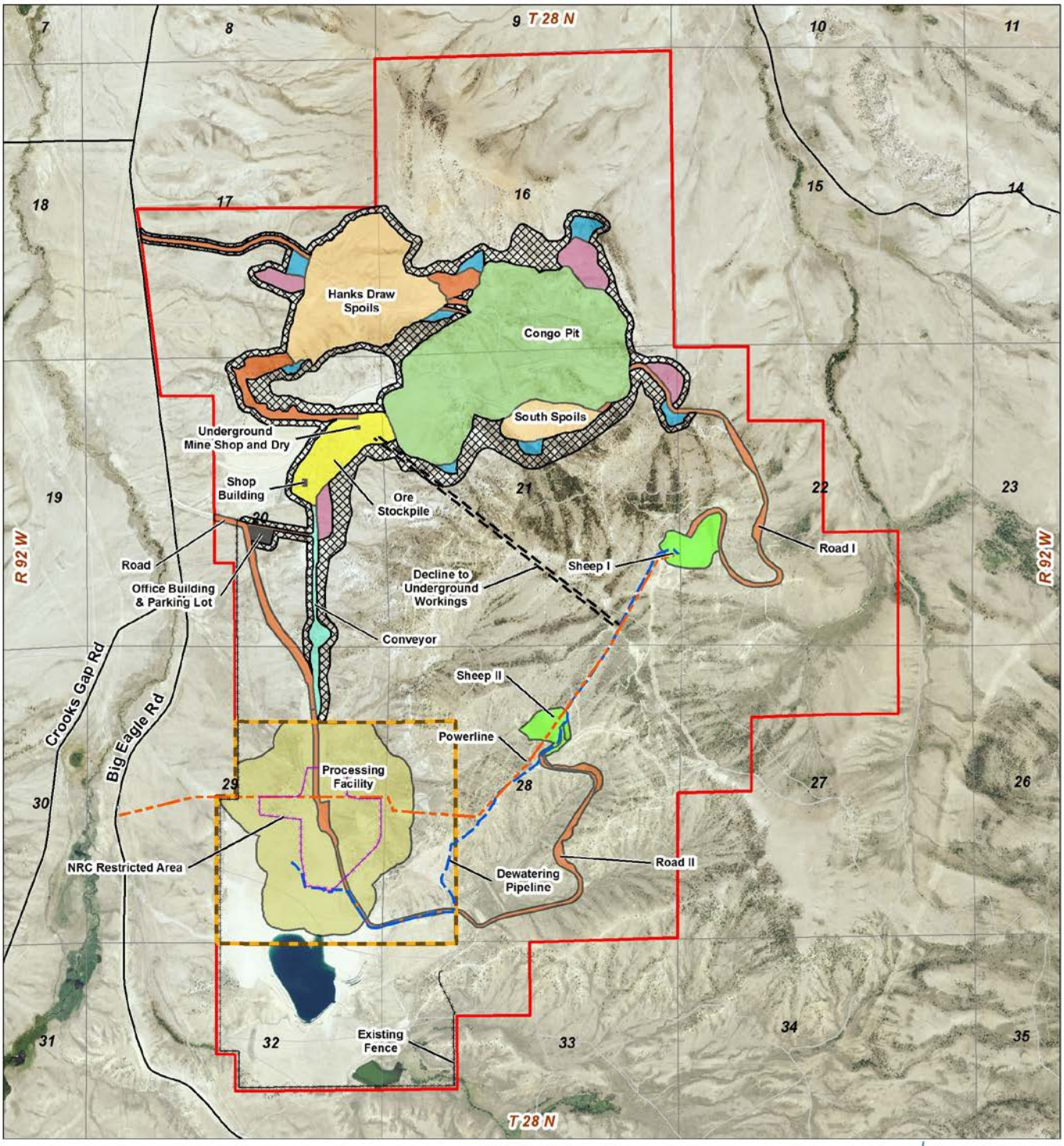
As a result of this 60-year history of mining and reclamation, various portions of the mine were operated and reclaimed under varying regulations and to varying reclamation standards. Existing disturbance and mine reclamation under the active WDEQ-LQD Permit to Mine 381C is discussed under the No Action Alternative in Section 2.5. Map 2.2-1 provides an overview of the existing disturbances within the Project Area.

In addition to various mining and reclamation, exploratory drilling has been on-going since the discovery of uranium in the 1950's. Thousands of exploration holes were drilled within the Project Area. These holes were abandoned according to the applicable rules and regulations in place during the time exploration occurred. As a result, historic (pre-1970's) drill holes and access roads remain un-reclaimed throughout much of the Project Area. Energy Fuels and their predecessors have mapped the majority of the old drill holes for safety purposes and ore body delineation, but information is not necessarily available to locate all of the old drill holes.

Titan Uranium Inc. completed additional drilling from 2009-2011 under two BLM Notice Level Operations, resulting in a total surface disturbance of less than 10 acres. These drill holes, and others completed after enactment of the state's reclamation laws, have been abandoned in accordance with state regulations including plugging of the drill holes and reclamation of the drill pads and access roads.

2.3 PROPOSED ACTION ALTERNATIVE

Energy Fuels proposes to explore for, and develop uranium reserves to extract approximately 1.0 million to 2.0 million pounds of uranium oxide (U_3O_8) or yellowcake from the ore per year during active operations (estimated at 20 years). Mining would be completed using conventional methods including both open-pit and underground methods. The main components of the Project are illustrated on Map 2.3-1. Surface and mineral ownership is discussed in Section 2.3.1, and the proposed surface disturbance is discussed in Section 2.3.2. There are three principal phases in the Proposed Action: Construction, Operations, and Reclamation. These phases are summarized below and discussed in more detail in Sections 2.3.3, 2.3.4, and 2.3.5, respectively. The schedule is discussed in Section 2.3.6, followed by sections on project-specific information that would affect the environmental analysis (including workforce, traffic, transportation, waste management, water management, and monitoring). Table 2.4-1 (below in Section 2.4, BLM Mitigation Alternative) shows both applicant-committed mitigation measures in the Proposed Action and the BLM proposed additional mitigation measures (in the BLM Mitigation Alternative).



Map 2.3-1
Proposed Action Disturbance Footprint

Sheep Mountain Project Area
NRC License Boundary

Proposed Action Disturbance Footprint (929.0 Acres)

- Congo Pit (216.3 Acres)
- Processing Facility (205.3 Acres)
- Ore Stockpile (30.5 Acres)
- Pad (26.1 Acres)
- Topsoil Stockpile (27.9 Acres)
- Spoils (123.7 Acres)
- Ponds (18.2 Acres)
- Conveyor (10.4 Acres)
- Roads (84.9 Acres)
- Buildings and Parking (2.7 Acres)
- Disturbance Buffer (183.0 Acres)

N

0 800 1,600 2,400 Feet

No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM

Construction includes the building of facilities and installation of equipment that would be needed prior to Operations. Operations would include the mining and processing of uranium ore. Conventional open pit (Congo Pit) and modified room and pillar underground (Sheep Underground Mine) mining methods would be employed to remove mineralized uranium ore. Ore from both the Congo Pit and the Sheep Underground Mine would be stockpiled at the entry to the Sheep Underground Mine on the Ore Stockpile for later transport to:

- An On-Site Ore Processing Facility. This would be licensed by the NRC as a uranium processing mill (see Figure 2.3-1). Ore would be transported to this Facility via conveyor, which would be within the Project Area. The Facility would include a Heap Leach Pad for dissolution of the uranium from the ore; a series of Treatment Ponds (Holding Pond, Collection Pond, and Raffinate Pond) for the solution from the Pad; an Extraction Plant for removing the ore from solution, and a Precipitation and Packaging Plant.

- An Off-Site Ore Processing Facility. Ore would be transported to this location via truck to the Sweetwater Mill (Map 1.1-1). The Sweetwater Mill is owned and operated by Kennecott Uranium Company (Kennecott), a division of Rio Tinto Americas, Inc. The mill is located entirely on private lands owned by Kennecott.

The option to pursue off-site processing is a sub-part of the Proposed Action because it is advanced by Energy Fuels. The Sweetwater Mill (owned and operated by Kennecott) is located entirely on private lands owned by Kennecott and permitted with the NRC as an operating license under Source Material License SUA-1350 which allows for production of 4,100,000 pounds of yellowcake per year. Therefore, Kennecott could receive ore and begin operations under the stipulations of their permit at any time. For the purpose of analysis within this EIS, it is assumed that operations at the Sweetwater Mill would occur under the existing license without significant revisions, and impacts associated with the operations of the mill would be similar to those of the operation of the Heap Leach Pad at Sheep Mountain and/or the Piñon Ridge Mill in Colorado in relation to applicable resources such as air and human health and safety. The impacts associated with hauling ore to the Sweetwater Mill from the Sheep Mountain Project Area and operating the Sweetwater Mill are disclosed in this EIS because they are connected actions. However, the BLM would not be involved in permitting or authorizing hauling of ore to the Sweetwater Mill along county roads or processing at the Sweetwater Mill.

Reclamation would include decommissioning of facilities, backfilling, and revegetating of the mined areas, and covering of the Heap Leach Pad to prepare for long-term care and maintenance by the State of Wyoming or the U.S. Department of Energy (DOE). Surface disturbance associated with the Proposed Action Alternative is shown in Table 2.3-1.

Description of the Proposed Action Alternative is derived from various documents submitted by Energy Fuels or the predecessor permit holder. Energy Fuels' Plan of Operations (Energy Fuels, 2013a) describes the Proposed Action Alternative in the detail necessary to satisfy the BLM's 43 CFR 3809.401 requirements, and is the principal document used to summarize the Proposed Action. Energy Fuels submitted a revision to the Permit to Mine 381C application with the WDEQ-LQD on January 9, 2014. Additional details specific to the mining operations and reclamation are presented in this application. In addition to the BLM and WDEQ permitting documents, Energy Fuels will submit detailed descriptions of the milling/processing facilities to the NRC as part of a required mill license application which will require separate and additional environmental review under NEPA. Details related to the processing facility and underground mining can be obtained when the other documents are made publicly available.

2.3.1 Surface and Mineral Ownership

Map 2.3-2 provides an overview of the surface and mineral ownership in the Sheep Mountain Project Area. On-site mining and ore processing under the Proposed Action would occur within the Project Area, which encompasses the WDEQ-LQD Permit to Mine 381C mine permit area and the NRC License Area, which would be excluded from the WDEQ-LQD Permit to Mine 381C mine permit area.

The Project Area includes approximately 3,611 surface acres (~5.6 square miles) of mixed ownership including ~2,316 acres of federal surface, 772 acres under state ownership, and 523 acres of fee lands. Approximately 2,838 acres of federal mineral estate is included in the Project Area. Off-site processing at the Sweetwater Mill would occur on private lands entirely owned by Kennecott.

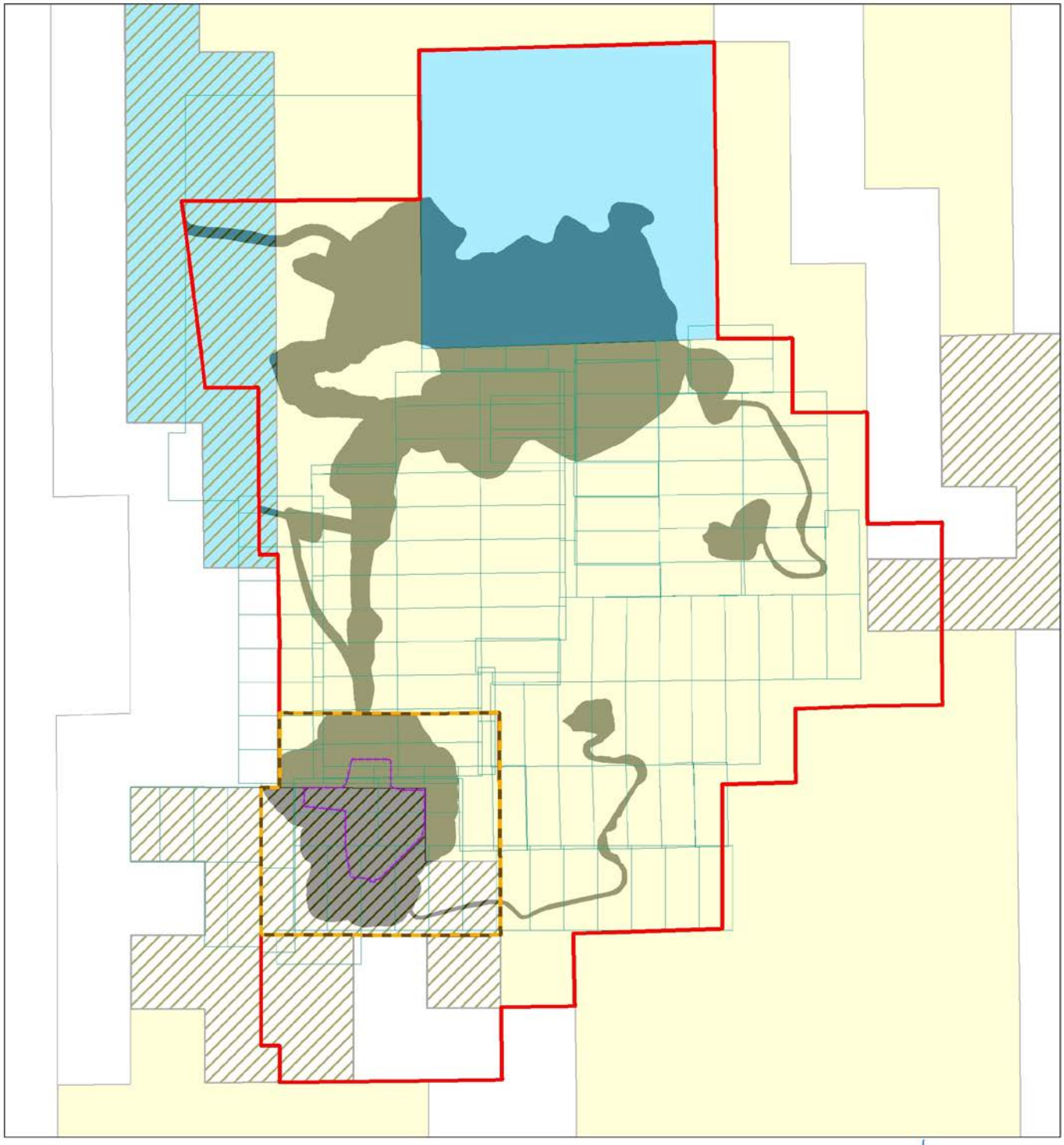
2.3.2 Proposed Surface Disturbance

Map 2.3-1 provides an overview of the surface disturbance and notes the proposed acreage for each project component. Map 2.3-2 provides an overview of the surface disturbance associated with the Proposed Action in relation to surface and mineral ownership. The Proposed Action would require 929.0 acres of disturbance of which 356.5 acres would be new disturbance and 572.5 acres was previously disturbed. Included in these disturbance acreages are 183.0 acres that could potentially be disturbed (130.7 acres of new disturbance and 52.4 acres of previous disturbance) that form a 100-foot buffer zone around the proposed disturbance to accommodate surface water drainage features, potential additional future disturbances, or modifications to the design of mine features. Most of the new disturbance is associated with the Congo Pit, the Ore Processing Facility, and the Hanks Draw Spoils Facility. Table 2.3-1 provides a summary of the proposed new disturbance and re-disturbance by project component for the Proposed Action.

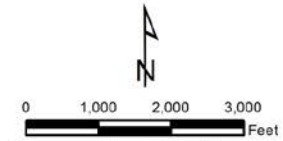
Table 2.3-1
Estimates of Proposed Surface Disturbance - Proposed Action

Project Component	Total Proposed Action Footprint[1] (acres)	New Disturbance (acres)	Re-Use of Disturbed Area[2] (acres)
Congo Pit	216.3	11.2	205.1
Ore Stockpile	30.5	0.0	30.5
Roads[3]	85.0	11.1	73.8
Topsoil Stockpiles[4]	27.9	24.9	3.0
Spoils (Hanks Draw and South Spoils Facilities)	123.7	82.4	41.3
Sheep I and Sheep II Pads	26.1	0.0	26.1
Ponds	18.2	16.2	2.0
Conveyor	10.4	6.7	3.8
Buildings and Parking	2.7	2.4	0.3
Mine Area Disturbance Subtotal	**540.8**	**154.9**	**385.9**
Disturbance Buffer (33.8%)[5]	183.0	130.6	52.4
Mine Area Disturbance Total	**723.8**	**285.5**	**438.3**
Processing Facility	205.2	71.0	134.2
Project Area Disturbance Total	**929.0**	**356.5**	**572.5**

[1] Includes mine support facilities, processing plants, heap leach, ponds, and reclamation footprint.
[2] Re-use of disturbed area represents previously disturbed ground that is in various stages of reclamation or remains un-reclaimed from past mining.
[3] Includes use of existing roads and new roads.
[4] Includes existing and proposed topsoil stockpiles.
[5] A 33.8 percent increase represents a 100 ft. buffer zone around the proposed disturbances associated with mining to accommodate surface water drainage features and equals 183 acres.



Map 2.3-2
Surface and Mineral Ownership



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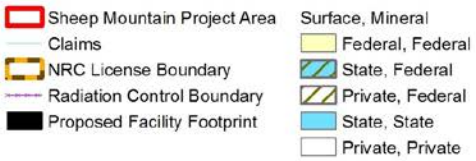

2.3.3 Construction

2.3.3.1 Overview

The Construction phase of the Project would include the installation of various roads, buildings, utilities, and infrastructure that would be necessary for Operations to begin. Prior to the start of Operations, access roads and utilities would be installed. Mine support facilities such as an administrative office, shop, warehouse, and guard house for the Congo Pit, would be constructed before mining could occur. The Ore Stockpile and conveyor system would be constructed near the entry point to the new proposed double entry decline to the Sheep Underground Mine (see Map 2.3-1). Construction of the double entry decline would be deferred up to 5 years after the start of the Congo Pit operation. For on-site ore processing, a Processing Facility consisting of a 40-acre Heap Leach Pad, Treatment Ponds, Extraction Plant, and Processing and Packaging Plant would be constructed in the southwest corner of the Project Area.

Site access and facilities are shown on Map 2.3-1. Although some of the construction would be phased as Operations take place, all construction and associated surface disturbance is analyzed as occurring in the first year. This approach ensures that the maximum possible level of disturbance and associated impacts (e.g., air emissions) are identified in this EIS. The various construction components, the surface disturbance associated with each, and any interim reclamation are described further in the following sections.

2.3.3.2 Topsoil Salvage

Topsoil would be salvaged to the maximum extent practicable during excavation and would be accomplished using a scraper, dozer, motor grader, or other equipment capable of selective excavation of topsoil. Topsoil salvage and segregation would be directed by trained ground control personnel experienced with the identification of topsoil and/or other suitable plant growth material which may be encountered during excavation. This may include alluvial soils or buried topsoil from previous mine operations. Salvaged topsoil would be placed in designated stockpile areas. All topsoil stockpiles would be neatly dressed, stabilized with an interim seed mixture approved by the BLM and WDEQ-LQD and clearly signed. Existing topsoil stockpiles identified during the 2010 surveys would be preserved for future reclamation needs.

2.3.3.3 Roads and Access

Access roads to, and travel routes within, the Project Area are displayed on Maps 1.1-1 and 2.3-1, respectively, and are further described in the Transportation Plan (see Appendix 2-A). Access to the site from US Highway 287 at Jeffrey City is south via the Crooks Gap Road/Fremont CR 318. Within the Project Area, the majority of roads and utilities are pre-existing from previous mining operations or are under an existing right-of-way. During construction, the Project Access Road would be extended to the Congo Pit. The existing Hank's Draw Road would be partially covered by the Hanks Draw Spoils Facility, with the remaining road removed and reclaimed once it is no longer needed to support exploration and mining. Energy Fuels would obtain the necessary permits from the WOSLI to utilize the portions of Hank's Draw and Project Access roads that traverse State trust lands.

Access to the Sheep I Shaft would be provided by a constructed road along the southern end and within the disturbance limits of the disturbance buffer adjacent to the Congo Pit. A road would be built from the mining facilities to the On-Site Ore Processing Facility. Some existing roads within the Project Area would be upgraded in order to address erosion issues. Disturbance associated with road construction and road upgrades, such as the installation of

culverts and erosion control structures, are identified in Table 2.3-1 and on Map 2.3-1. Culverts and channels were sized in accordance with conventional techniques (e.g., CulvertMaster software), experience with culvert maintenance (e.g., minimum culvert size not susceptible to plugging), and site specific information (Energy Fuels, 2014a).

Fencing would be limited to those areas where fencing is needed to preclude public access for safety reasons. The entire Project Area would not be fenced; however, appropriate signage would be posted around the site perimeter, and access at the site entrance would be controlled with a guard house manned during operating hours and locked at all other times. Access to the site would be controlled by barbed wire fencing and/or gating at all defined points of ingress and egress to the Project Area and internally at the "NRC License Area" – an area that contains the uranium processing facility that would be external to the Permit to Mine 381C mine permit boundary but within the Project Area, once NRC licensing is complete. The NRC Restricted Area would be fenced with a chain link fence topped by barbed wire. The entrance to the NRC Restricted Area would be through a gate, which would be manned during operating hours and locked at all other times. The Hank's Draw Road would be gated and opened only as needed for deliveries (e.g., mine equipment, road materials), maintenance, and inspections. No additional fencing is proposed around the Congo Pit, spoils facilities, topsoil piles, or mining facilities.

The Mine Safety and Health Administration (MSHA) and State Mine Inspector's Office would regulate public health and safety matters at the mine facilities. Any persons entering the site would be required to sign in; complete safety training as required by regulations; follow the mine's safety rules and procedures that provide for compliance with MSHA and state regulations; and be equipped with proper Personal Protective Equipment (PPE) depending on which areas they wish to enter. The On-Site Ore Processing Facility would be regulated by NRC and would have a different set of safety rules based on compliance with NRC regulations for uranium processing. In addition to the requirements for all persons entering the site, the NRC rules include procedures for monitoring radiation doses within the Ore Processing Facility and radiometric scanning of ore processing personnel, visitors, vehicles, and other equipment and materials prior to them leaving the NRC Restricted Area.

2.3.3.4 Utilities

Because the Sheep Mountain area has been previously mined, there are existing electric, phone, and natural gas services. Upgrade and adaption of this infrastructure would be necessary. Energy Fuels installed and upgraded overhead power lines in fall 2011 that run from the Big Eagle Road through the proposed processing facility to the Sheep II and Sheep I shafts (Map 2.3-1). A separate power line runs through the proposed Congo Pit from Crooks Gap to the Sheep Creek Oil Field (east of the Project Area). Energy Fuels would relocate this power line during construction of the Congo Pit. The buildings would be heated using natural gas from an existing line that comes into the Project Area, near the proposed On-Site Ore Processing Facility, from a main line located along Big Eagle Road. Electrical power and natural gas for the Office and other buildings located by the entrance would come from the Ore Processing Facility or as separate lines into the site from Crooks Gap Road, using existing rights-of-ways.

An existing 8-inch water line extends from the Sheep I Shaft to the vicinity of the McIntosh Pit. The pipeline follows the power line from the Sheep I Shaft to the Sheep II Shaft where the pipeline then follows the road and discharges into the existing McIntosh Pit (see Map 2.3-1). This line would be extended to the proposed Ore Processing Facility. A large submersible pump(s) in the Sheep I and/or Sheep II shafts would be used to dewater the mine and supply non-potable water for ore processing, dust suppression on the site roads, fire suppression systems, and washing equipment. Potable water would initially be obtained from the Jeffrey City

Water and Sewer District via water trucks. A water treatment system would ultimately be permitted and constructed on site to treat well water for potable use at the various buildings on site. No additional surface disturbance would be associated with the water treatment facility because it would be located within the proposed surface disturbance footprint. A water treatment system may also be necessary for water from dewatering of the Congo Pit and Sheep Underground Mine. As with the treatment system for potable water, no additional surface disturbance would be associated with the facility because it would be located within the proposed surface disturbance footprint.

2.3.3.5 Congo Pit

The construction phase of the Congo Pit would include installation of road networks and support facilities that are required before mining can begin. Roads starting at the southwest and northwest corners of the Congo Pit would be constructed to reach the Hanks Draw and South Spoils facilities and the Ore Stockpile (2.3-1).

Support facilities would consist of a guard house, the main office, mine shop, and warehouse located near the site entrance. Portable trailers with bathrooms would be set up near the Ore Stockpile to serve as a meeting and lunch area for the crews. A fuel station would be located near the Ore Stockpile for fueling mobile equipment. In consideration of the remoteness of the site and the potential hazardous winter driving conditions, emergency stores of nonperishable food and water would be kept on-site along with portable cots should it be necessary for personnel to remain on-site during adverse weather.

The previously reclaimed area of the Paydirt Pit (approximately 19 acres) would be reconstructed using mine spoils to accommodate the Ore Stockpile, crushing equipment conveyor, and surface facilities associated with the Sheep Underground Mine (Map 2.3-1). The enclosed overland conveyor would travel from the Ore Stockpile to the On-Site Ore Processing Facility. It would be constructed approximately 20 feet off the ground, and the disturbance would be within the proposed road corridor extending from the Sheep Underground Mine to the On-Site Ore Processing Facility (see Map 2.3-1).

2.3.3.6 Sheep Underground Mine

Development of the Sheep Underground Mine would not occur until approximately Year 5 of the Project in order to allow for mine dewatering and rehabilitation of the underground workings. Underground mine development would start with mine dewatering and development of the new double entry decline starting at the Ore Stockpile (see Map 2.3-1). Prior to the start of production from the underground mine, the existing workings would be rehabilitated including: installing a ventilation system; re-bolting (as necessary); installing power, water, and compressed air lines; building haulage roadways; and, conducting long-hole drilling to delineate ore zones.

An estimated 19 acres of the reclaimed Paydirt Pit area would be re-disturbed during construction to build the underground mine support facilities. Most of this disturbed area would include the Ore Stockpile, crusher, conveyor loadout, and fuel station, which would also be used by the open pit operations. A small office building and shop and a dry (i.e., change house) would be located near the entrance to the decline. The office would be used by the shift and maintenance foreman and surface support personnel. The shop would be used to work on major repairs and rebuilds. Most other maintenance work would be performed in an underground mine shop. Current plans are to utilize the warehouse at the main administration building to support both the surface and underground operations.

2.3.3.7 On-Site Ore Processing Facility

Energy Fuels may process (mill) some or all of the ore at an on-site facility that would be constructed in the Project Area. The general site layout for the facility, which would be in the southwest portion of the Project Area (see Map 2.3-1) is shown on Figure 2.3-1. The facility would include a Heap Leach Pad; Treatment Ponds (Holding Pond, Collection Pond, and Raffinate Pond), Extraction Plant, and a Precipitation and Packaging Plant. An interim solid waste management area and a wash-down pad would also be included in the facility. Access to the On-Site Ore Processing Facility would be controlled through the NRC Restricted Area for protection of public health and safety. No surface or groundwater discharge would occur from the On-Site Processing Facility.

The majority of the facility would be located on private lands owned by Energy Fuels and on existing spoils from the nearby McIntosh Pit. Construction would be designed to avoid potential conflict with WDEQ-Abandoned Mine Lands (AML) plans to reclaim the McIntosh Pit, which are described in Chapter 5.

The NRC has the primary responsibility to authorize the design, construction, and management of the On-Site Ore Processing Facility due to the presence of 11(e)(2) byproduct material. The design described herein has been discussed with, but not yet approved by the NRC, and it is included to provide sufficient information for analysis of the potential impacts of the Project addressed in this EIS. As noted above, the NRC licensing process would require separate and additional environmental review under NEPA.

While surface disturbance on BLM-managed lands within the NRC License Area is within the BLM's jurisdiction, the BLM defers to all matters contained within the NRC License Area to the NRC with regard to ore processing design, operation, closure, and reclamation. For purposes of analysis, this EIS assumes that all required approvals from the NRC, WDEQ, and other federal, state, and local agencies would be obtained before Construction and Operations begin.

2.3.3.7.1 Heap Leach Pad

The Heap Leach Pad would be constructed by excavating the 40-acre pad to design grades in accordance with NUREG-1620, as the majority of the pad would be below the ground surface. A 20 foot-wide access road would be constructed around the perimeter. The northwest-facing portion of the pad would daylight towards the Treatment Ponds and the Extraction and Precipitation and Packaging plants (see Figure 2.3-1). The perimeter of the Heap Leach Pad would be ditched to divert stormwater runoff around the pad.

The outside edge of the berm would be ditched to divert stormwater runoff from the pad area. Pipelines (6- to 13.5-inch in diameter) would be constructed to contain leach solution and would be installed along the top of the berm. Lateral lines at each half cell would allow for leach solution (lixiviant) distribution over the leveled pad area. An additional berm, 24 inches high, would be constructed between each heap cell and contain a 6-inch collection pipe.

Energy Fuels is proposing a triple liner containment system with two leak detection systems. The following description of the liner and pad system is derived from the Plan of Operations (Energy Fuels, 2013a). The regulatory authority for approving the design rests with the NRC. The following description is provided to help the reader understand Energy Fuels' proposal. The adequacy of this design meets BLM's minimal Performance Standards (43 CFR 3809.420), but adequacy of the details of the engineered design is not part of the BLM's decision space in this EIS.

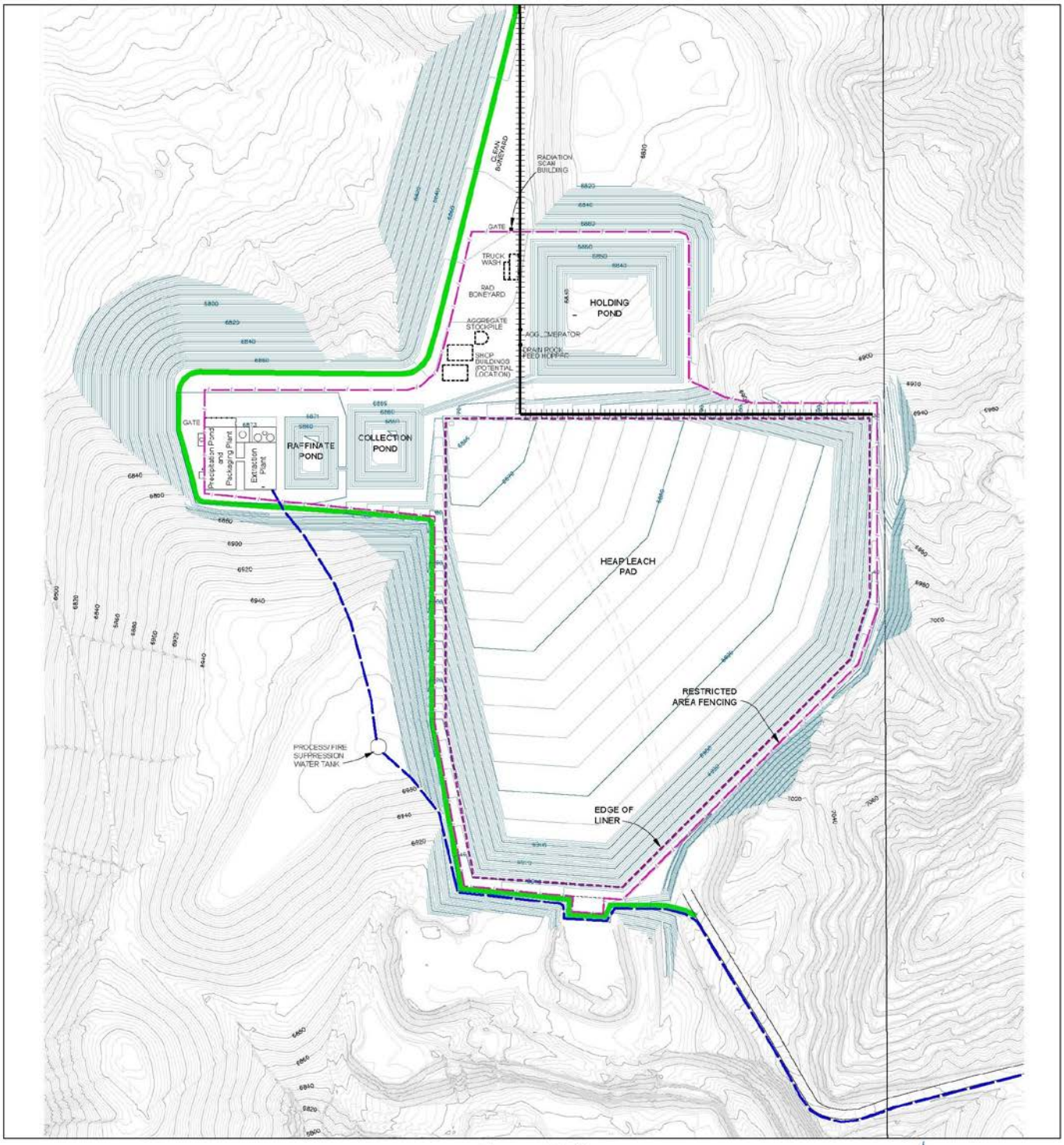

Figure 2.3-1
Processing Facility Site Layout

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LEGEND

- EXISTING ELEVATION
- PROPOSED ELEVATION
- RESTRICTED AREA
- PROPOSED ACCESS ROAD
- EDGE OF LINER
- PROPOSED CONVEYOR ALIGNMENT
- DEWATERING PIPELINE ALIGNMENT

The 40-acre Heap Leach Pad would be constructed either in phases or all at once, and when completed, would include six cells. The ground for the pad would first be graded and compacted with a shallow slope (minimum of 1 percent) towards the northwest. The foundation for the pad would be built by compacting the existing subgrade material. A triple liner containment system, which incorporates two leak detection systems, would be installed on top of the prepared subgrade materials. The lowermost layer (tertiary liner) would consist of a 60-mil high density polyethylene (HDPE) Super Gripnet® drain liner as manufactured by Agru America (or approved equivalent). The layer would have spikes on the underside of the liner providing increased shearing resistance with the foundation, and drain studs on the top surface to provide drainage capacity for the secondary leak detection system. Above the tertiary liner, the secondary liner would consist of a 60-mil HDPE MicroDrain® liner as manufactured by Agru America (or approved equivalent) with Micro Spike® texturing on the underside (adjacent to the drain side of the tertiary liner), and drain studs on the top surface to provide drainage capacity for the primary leak detection system. By incorporating the drain liner, the need for separate drainage geonet layers is eliminated. Above the secondary liner, a 60-mil HDPE Micro Spike® liner would be installed as the primary liner, with texturing on both sides for increased frictional resistance. The rolls of liner material are joined together using heat fusion equipment. Leak detection sumps would be placed at low points between the primary and secondary liner, as well as between the secondary and tertiary liners. The sumps would be equipped with standpipes, which are used to access the sump for monitoring purposes and to pump out any collected solution. Collection pipes would be placed directly over the primary liner in order to enhance solution collection while minimizing solution head on the liner system. Above the synthetic lining system and collection pipe network, a minimum of 24 inches of gravel overliner materials would be placed as both a drainage layer and a cushioning layer to protect the liner from damage by equipment.

Detailed schematics and descriptions of the Heap Leach Pad and liner system would be provided in the license application to the NRC. The Heap Leach Pad would also contain a smaller cell within the southern portion of the pad that is specially engineered for the storage and disposal of solid waste generated during processing.

2.3.3.7.2 Treatment Ponds

Three separate ponds, the Raffinate Pond, Collection Pond, and Holding Pond, would be constructed with similar triple liner and double leak detection systems as proposed for the Heap Leach Pad. The location and approximate size of these ponds is shown on Figure 2.3-1.

The Raffinate Pond would store the lixiviant which is composed of water; an oxidizing agent, such as sodium chlorate ($NaClO_3$); and a complexing agent, such as sulfuric acid (H_2SO_4). The Raffinate Pond would receive recycled uranium depleted aqueous solution (raffinate) from the Extraction Plant which would be used as leach solution make-up and be applied to the Heap Leach Pad after the addition of chemical reagents. The chemical reagent levels within the ponds would be monitored, but composition would be controlled by automated systems with sensors. The pond would be sized as required by NRC to contain more than 1 day-worth of lixiviant and leach solution make-up, plus the volume of water from a storm event (e.g., a 100-year, 24-hour event) over the Raffinate Pond.

The collection pond would store uranium-rich aqueous solution, or Pregnant Leach Solution (PLS), that has drained from the Heap Leach Pad. PLS would be recirculated in the Collection Pond until it has reached the appropriate concentration to be transferred to the Extraction Plant. The chemical levels within the ponds would be monitored, but composition would be controlled

by automated systems with sensors. The pond would be sized as required by NRC to hold more than 1 day-worth of PLS, all solution contained within the Heap Leach Pad, plus the volume water from a storm event over the Collection Pond and Heap Leach Pad.

The Holding Pond would be the largest of the three ponds and would be sized as required by NRC to hold runoff from the entire processing facility during a Probable Maximum Precipitation (PMP)/Probable Maximum Flood (PMF) event (the maximum possible precipitation and flood event based on available information) as defined by NRC (NUREG 1623, Design for Erosion Protection for Long-Term Stabilization, 2002, page 10, Section 2.2.1.2) as well as all planned process liquid waste that could accumulate over a 3-month period at the facility. An additional 5 feet of pond depth would be added to account for wave motion and maintain freeboard. Overflow drainage channels, with double lined leak detection systems, would be constructed around the Collection Pond and Raffinate Pond to direct any overflow to the Holding Pond.

The primary purpose of the Holding Pond would be for the temporary storage and ultimate disposal of liquid waste. Liquid wastes from the Extraction and Precipitation plants would be treated and recycled when possible, but all non-reusable wastewater would be disposed of through natural or mechanically enhanced evaporation within the Holding Pond. Automated spray evaporators would be installed to accelerate the evaporation rate but would shut down in adverse weather conditions. Liquid waste might also be sprayed over the spent portions of the Heap Leach Pad as an alternative evaporative disposal method. Solids that precipitate out of the liquid waste would be periodically removed from the Pond and placed in the interim solid water management area within the facility. The facility would also be subject to EPA requirements (40 CFR Part 61 Subpart W) because the ponds would contain uranium byproduct material (i.e., 11(e)(2) material).

2.3.3.7.3 Extraction and Precipitation and Packaging Plants

Construction of these plants would include excavating foundations, completing earthwork, pouring concrete pads, and constructing the two main processing buildings: the Extraction Plant and the Precipitation and Packaging Plant. For the Extraction Plant, Energy Fuels is exploring the use of solvent extraction (SX) and/or ion exchange (IX) to extract the uranium from solution. Selection of an SX versus an IX system would have negligible surface impacts because the disturbance areas and control systems for the two processes would be similar.

Additional details on the construction and design of these buildings and other associated structures can be found in Section 2.3.4.5. Both buildings would be constructed on privately-owned lands within the NRC License Area (see Map 2.3-1). Additional structures within the NRC License Area would consist of two small shop buildings, aggregate stockpiles, boneyard, and a truck wash.

2.3.4 Operations

2.3.4.1 Overview

The Operations phase of the Proposed Action would consist of mining uranium ore using conventional open pit (Congo Pit) and underground (Sheep Underground Mine) methods. In addition to developing the Congo Pit for recovery of shallow ore reserves, Energy Fuels would rehabilitate and further develop the Sheep Underground Mine to be constructed for the recovery of deeper ore reserves. Ore from the Congo Pit and Sheep Underground Mine would be transported via overland conveyor to the On-Site Ore Processing Facility and processed to produce uranium oxide (U_3O_8) or yellowcake and/or transported for off-site processing at the Sweetwater Mill.

2.3.4.2 Congo Pit

Mining would initially occur within the Congo Pit (see Figure 2.3-2) starting at the northwest and moving southeast where ore zones deepen. Mining operations at the Congo Pit would be ongoing over 8 years. Table 2.3-2 provides the annual schedule for mining ore and spoils material from the Congo Pit and for placement of the spoils material. Surface disturbance associated with the Congo Pit would not occur all at once but would be sequenced over the life of the Project, as shown on Figure 2.3-2. Total disturbance at full development, including new disturbance and re-disturbance is listed in Table 2.3-1.

Table 2.3-2
Mine Sequence Quantities

Year	Total Excavated (CY)[1,2]	Hanks Draw Spoils Facility (CY)[1,3]	South Spoils Facility (CY)[1,3]	Intra-Pit Backfill (CY)[1,3]	Reclamation Backfill (CY)[1,3]
1	9,447,000	9,122,000	0	325,000	0
2	10,341,000	5,718,000	1,000,000	3,623,000	0
3	11,300,000	2,732,000	1,002,000	7,566,000	0
4	9,482,000	4,226,000	0	5,256,000	0
5	10,542,000	0	0	10,542,000	0
6	10,584,000	2,665,000	0	7,919,000	0
7	11,595,000	0	0	11,595,000	0
8	4,847,000	0	0	4,847,000	0
9	0	0	0	0	0
10	0	0	0	0	5,000,000
11	0	0	0	0	5,000,000
12	0	0	0	0	5,000,000
13	0	0	0	0	5,000,000
14	0	0	0	0	4,463,000
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	2,002,000
Totals	**78,138,000**	**24,463,000**	**2,002,000**	**51,673,000**	**26,465,000**

[1] CY = cubic yards.
[2] Total excavated volumes are inclusive of mineralized material (ore) and overburden/interburden (spoils), averaging 9.8 million CY per year over 8 years.
[3] Spoils and backfill volumes assume that the swell of excavated waste from the pit is equivalent to the volume of mineralized material removed from pit.

Design practices and equipment that have been successfully used at similar open-pit uranium mining operations throughout the west would be used for pit construction. Design details include highwalls with an average slope of 0.7Horizontal(H):1Vertical(V) (approximately 55 degrees). This reflects the average from a bench-cut highwall construction technique where 10-foot wide benches are cut every 50 feet on a 0.5H:1V slope (approximately 63 degrees). The average depth of the pit would be between 100 and 400 feet, but once fully excavated, the pit would reach a maximum depth of 600 feet near the southeast corner.

Because the Congo Pit overlies older mine workings, a ground control crew would be on site during excavation. The ground control crew would consists of an operator with a medium sized excavator, an operator with a medium sized dozer; and a field engineer with access to digital 3-dimensional maps of the historic underground mines underneath the Congo Pit footprint.

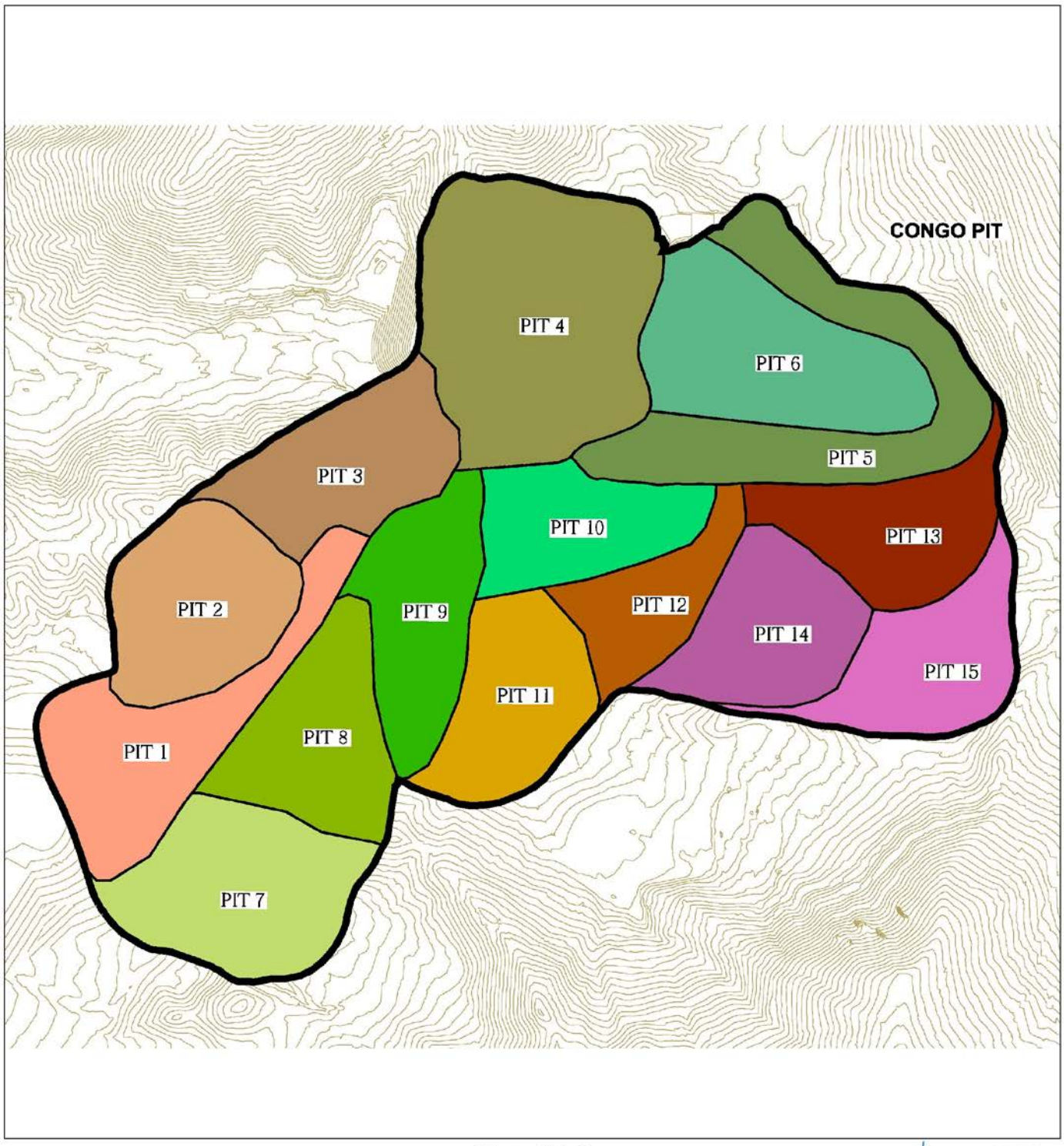
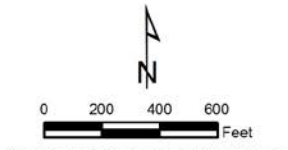


Figure 2.3-2
Congo Pit Sequence



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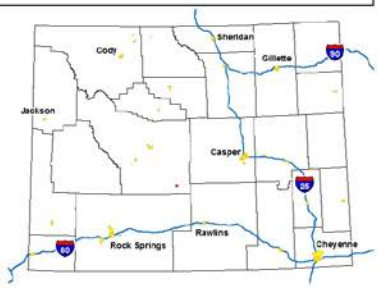


Additional knowledge of the historic underground workings would be gained through shallow seismic testing and the daily excavation of the Congo Pit. This crew would work to collapse any mine voids through over-excavation and subsequently backfilling depressions using spoils at hand. Blasting within the Congo Pit would only be required to assist in the collapse of mine workings and would be conducted by a certified blasting operator in accordance with MSHA regulations (30 CFR Parts 55, 56, and 57). Slope stability monitoring in the Congo Pit and Hanks Draw Spoils Facility would include visual inspection for features such as tension cracks, bulges, and survey of control points by electronic distance measuring equipment or similar devices.

Ramps and haul roads within the Congo Pit would not exceed a 10 percent grade and would average between 4 percent and 8 percent in grade. Roads are planned to be a minimum of 40 feet wide with primary haulage roads up to 60 feet wide. Equipment would average 12 feet in width, and the proposed roads are designed to provide ample room for travel. Road construction details can be found in Section 2.3.9, Transportation.

Surface water inflow to the Congo Pit would be controlled by constructing diversion channels around the pit highwall crest, which release runoff from undisturbed areas to off-site drainages. In addition to controlling stormwater runoff, the channel configuration would serve as a safety berm to prevent access to the highwall crest. Three design storms were used for sizing different flow control features at the Congo Pit and elsewhere in the Project Area. The 25-year, 24-hour storm was selected as the design storm for sizing of diversions, culverts, and stilling basins. Two types of ponds would also be used to control surface water flow and minimize erosion: sediment ponds and collection ponds. Sediment ponds would capture runoff from the disturbed areas, such as the spoils piles. The sediment ponds would be sized to contain the 100-year, 24-hour storm plus ensure that the estimated sediment storage volume for one year is always available. The sediment pond spillways would pass a minimum of the 25-year storm, in accordance with WDEQ regulations (Section C-31(c) of the WDEQ Water Quality Rules and Regulations (WDEQ, 1984)). The WDEQ regulations only require sediment ponds to impound the 10-year, 24-hour storm, (WDEQ, 1984) and the intent is to impound water long enough for the sediment to settle prior to discharge. However, due to concerns about the potential for radium in the discharge water, the sediment ponds in the Project Area were sized to substantially reduce the possibility of discharge.

Collection ponds would capture runoff from undisturbed areas around the proposed disturbance boundary, in areas where release of this water is not desired or is not possible given planned mine facilities and basin topography. Collection ponds would not release water and would draw down through evaporation and infiltration. Given that the collection ponds are not intended to allow release of any water, they were sized to contain the runoff volume associated with a 100-year, 24-hour storm. Emergency spillways for collection ponds were sized using the 25-year storm. Spillways for collection ponds were set above the 100-year storm volume, and are only included to add conservatism to the design.

The pond designs were created with conventional techniques (e.g., SEDCAD4 software for pond designs) and site-specific data (e.g., particle size distribution). The system of diversion ditches and ponds would be built as the Congo Pit is mined. Locations of the surface water control features at the full extent of the pit (and including other areas of the site) are shown on Figure 2.3-3. Additional measures including straw wattles, sediment fencing, and other Best Management Practices (BMP's) as described in the WDEQ-LQD Permit to Mine 381C application revision and the Stormwater Pollution Prevention Plan (SWPPP) would be used to limit erosion and control sediment within and around the Congo Pit and elsewhere in the Project Area (Energy Fuels, 2014a).

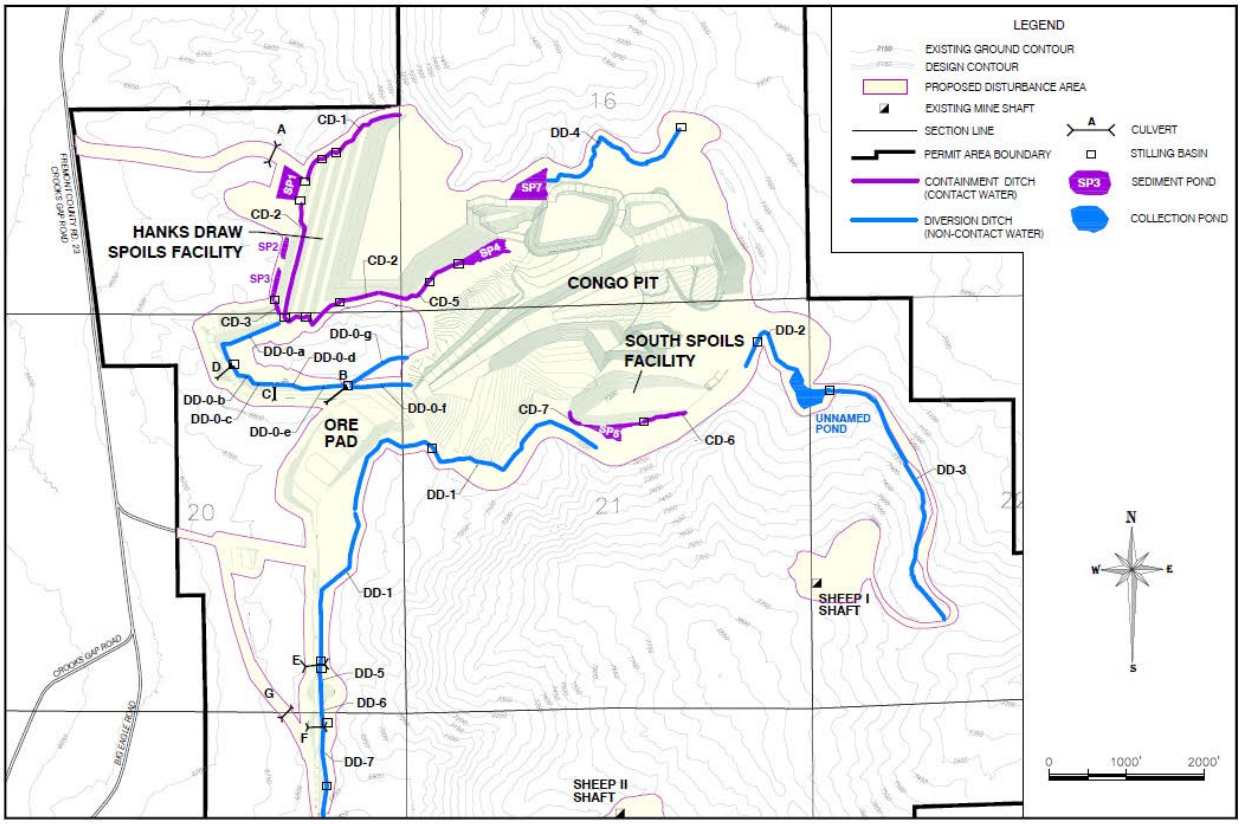


Figure 2.3-3
Proposed Stormwater Management Controls (Year 8)

Under the proposed schedule, excavation of the Congo Pit would intercept groundwater in the 2nd or 3rd year of mining at which point the lower portion of the pit would require dewatering. Energy Fuels anticipates a maximum of 375 gallons per minute (gpm) of groundwater flow into the pit. A shallow angle pit floor would be maintained to drain water to the deepest part of the pit where a pump system would pump excess water out of the pit to a storage tank and/or pond. The water could then be used for dust suppression on haul and access roads. More information on water management is provided in Section 2.3.11.

To minimize waste and maximize production, Energy Fuels would establish an in-pit grade control program. This program would use trained personnel to conduct visual and radiometric scanning and map mineralized zones. Assays of the mineralized zones and ore trucks would be used to verify grades. The assays would be performed in a portable trailer equipped with laboratory analytical instruments. The trailer would be located in close proximity to the mining to allow for real-time data collection and evaluation.

The Congo Pit is essentially a single open pit that would be developed sequentially to accommodate the desired mine production and allow for internal backfilling. Mine development would work down dip from the shallowest deposits at the northwest end of the Congo Pit to the deepest deposits at the southeast end of the pit in 15 contiguous pits within the overall pit footprint (see Figure 2.3-2). Waste rock from the first pits would be hauled to the Hanks Draw Spoils Facility. Beginning with Pit 7, mine spoils would be replaced within the area of the pit previously mined. On-going backfill and reclamation efforts would be part of the proposed sequencing as described in Section 2.3.5.3. The actual sequence may vary as site conditions dictate, and updates would be reflected in the annual reporting process (Section 2.3.12).

During mining, excavated materials other than ore would be inspected and/or sampled to identify material that could be used for final cover and to identify material unsuitable for replacement at shallow depths. Material considered suitable for final cover (e.g., oxidized surficial mine overburden with low radiological levels) would be segregated and stockpiled similar to topsoil. Material considered unsuitable for replacement at shallow depths would be isolated and stored in the spoils facilities until final reclamation or placed for progressive backfill directly in the Congo Pit. Spoils that cannot be used as in-pit fill material from the Congo Pit and Sheep Underground Mine would be trucked and stored in two stockpile locations and used as grading fill in the existing Paydirt Pit. The Hanks Draw Spoils Facility would be located in Hank's Draw to the northwest of the Congo Pit. The South Spoils Facility would be located just south of the Congo Pit. The Hanks Draw Spoils Facility would encompass approximately 101 acres, at full build-out. The South Spoils Facility would encompass approximately 16 acres.

The spoils facilities would be constructed in a phased manner with vertical lifts of 50 feet or less and with safety berms around the pile perimeters. Spoils would be placed at the angle of repose (approximately 33 degrees) with minimum 10-foot wide set-back benches every 50 vertical feet to achieve an overall maximum slope of 1.7H:1V (i.e., 30.5 degrees). The lower lifts of the Hanks Draw Spoils Facility are designed at a flatter 3H:1V overall slope (i.e., 50-foot lifts at the angle of repose with a 75-foot wide safety bench) to enhance the stability. The stability of the Hanks Draw Spoils Facility under maximum build-out conditions was evaluated under static and earthquake-induced (i.e., pseudo-static) loading conditions, and the analyses were completed for the maximum height section, as well as the section with the steepest design slope (Energy Fuels, 2014a). Stability analyses considered both circular and non-circular failure surfaces.

2.3.4.3 Sheep Underground Mine

Underground mining would be deferred for 1 to 5 years after the start of the Congo Pit and it is anticipated that 368,000 tons per year of uranium ore would be mined. The anticipated Sheep Underground mine sequence is shown in Table 2.3-3.

Table 2.3-3
Sheep Underground Mine Sequence

Year	Extra Mine Spoil (tons)	Intra-Mine Spoil (tons)	Ore (tons)
Development	200,000	0	0
1	90,226	0	99,524
2	162,016	0	223,234
3	0	144,076	430,924
4	0	189,212	385,788
5	0	207,996	367,004
6	0	224,012	350,988
7	0	189,427	385,573
8	0	260,212	314,788
9	0	275,931	299,069
10	0	158,537	416,463
11	0	74,802	224,406
Total	**452,242**	**1,724,205**	**3,497,761**

The lower levels of the existing underground workings were allowed to flood after pumping of groundwater stopped in approximately the year 2000. Accordingly, the Sheep Underground Mine would first be dewatered at an anticipated rate of 750 gpm. Dewatering at a rate of about 250 gpm would be required throughout the life of the mine. After dewatering and investigating

the existing mine workings, the existing Sheep I and II shafts, which were constructed as part of earlier mining efforts, would be rehabilitated as necessary for safety purposes to accommodate ventilation and allow for continued dewatering.

The Sheep Underground Mine would include a newly constructed double entry decline (or entry shafts) beginning near the Ore Stockpile (see Map 2.3-1) and extending below Sheep Mountain for 5,470 feet in length at a grade of 10 percent. These new declines would access the mineralized zones that are too deep to be recovered through Congo Pit operations. A conveyor would be installed in one of the two entries for haulage of ore and waste to the surface.

A modified room and pillar method utilizing large, rubber tired diesel equipment would be employed in mining the underground workings. The mineralized deposit is comprised of 16 stacked mineralized zones with a total thickness of approximately 350 feet. The deposit would be mined primarily from bottom to top as a cut/fill operation. Ore and some waste material would be crushed and placed on a conveyor belt in the decline for transportation to the surface. Two mining schemes would be used in the Sheep Underground Mine, one for development drifts and one for production sections. Development drifts would use a dual opening approach with crosscuts on 100 foot centers. One of the openings would be 12 feet by 12 feet for haulage, and the other opening would be 12 feet by 8 feet for transportation and ventilation. Ramps and vertical raises would be used to connect development drifts for efficient movement of equipment and material.

In production areas, drifts would be advanced into the mineralized pods with multiple entries approximately 12 feet wide and a minimum of 6 feet high with crosscuts on 100-foot centers. Retreat mining would occur using the same methodology as advance mining, but the pillars between the drifts would be removed by two different methods depending on overlying mineralogy. If the overlying rock contains uranium mineralization, the rooms would be backfilled with waste rock, cement, and fly ash and then the pillars would be excavated. If the overlying rock does not contain mineralization, only temporary support such as timber or concrete cylinders would be placed in the rooms allowing the roof to ultimately collapse.

Because of the nature of the rock at Sheep Mountain, excavation of the declines and mine workings would be completed using both equipment and blasting. Blasting would be completed using ammonium nitrate and fuel oil (ANFO). Jumbo face drilling rigs would drill 8 to 12 foot blast holes that can be filled with ANFO. The blasts would be initiated using a non-electric system with the hole pattern, firing sequence, and delays designed to allow for optimum breakage and minimum ore dilution. Explosives and detonators would be stored in separate underground powder magazines. Blasting operations would be conducted by a certified blasting operator in accordance with MSHA regulations (30 CFR Parts 55, 56, and 57).

Spoils from the Sheep Underground mine that cannot be replaced within the mined out workings would be removed to the surface and placed in designated spoils piles or replaced as fill in the Congo Pit.

Rock bolts placed on uniform centers with wire mesh would be secured to the roofs and sidewalls by a rock bolting machine during advance mining. Overlap of bolts and wire mesh would provide for proper coverage between each bolt pattern. Ground control and grade control crews, as used within the Congo Pit, would also be used as an integral component of mine operations within the Sheep Underground Mine.

Energy Fuels estimates ventilation requirements in the Sheep Underground Mine at approximately 220,000 cubic feet of air per minute. Two 500-horsepower exhaust fans in the Sheep I and Sheep II shafts would draw air through the dual declines, and multiple portable face fans would direct air through the drifts and working faces to provide adequate air flow for the miners. Additional small diameter vent shafts would also be employed, as needed, to provide ventilation.

To aid with ventilation or remove additional ore, boreholes would be drilled using a raised boring machine. Boreholes would be constructed by drilling a small pilot hole from the top then pulling the raised boring machine bit up the hole from the bottom. This process enlarges the borehole and allows cuttings to fall to the bottom for removal.

Primary crushing of ore would also occur within the Sheep Underground Mine, and one of the declines would be used to transport the crushed ore to the surface.

2.3.4.4 Equipment

Equipment to be used at the Congo Pit would consist of stripping, mining, and support equipment as summarized in Table 2.3-4. The equipment was selected based on the nature and configuration of the deposit and physical parameters such as the anticipated haulage profile. Because the deposits consist of numerous dipping mineralized horizons, it was determined that both the stripping and mining equipment must not only be efficient but highly selective and flexible. The articulated mine trucks are 6-wheel drive units capable of operating in rugged and steep conditions. The twin-engine scrapers can self-load as a pair in a push-pull configuration or can be push loaded with assistance from the track dozers. The smaller self-loading scrapers can excavate in lifts as thin as the cutting edge of the unit, which is approximately 3 inches. For mining, the medium size excavators would be able to excavate in lifts as thin as 6 inches, if needed.

For the Sheep Underground Mine, mining equipment would include drills, rock bolters, scooptrams, haul trucks, and support equipment as summarized in Table 2.3-4. Jumbo drills would be used to drill and blast full development faces while jacklegs would be used in production sections where ore and waste rock may be drilled and blasted separately to maintain adequate grade control. Mucking of the ore and waste would be done using scooptrams. The scooptrams are able to load, haul, and dump mined material and are commonly referred to as LHDs. The LHDs would be used for haulage over shorter distances and would load low-profile underground trucks for longer haul distances. After a face is mucked out, rockbolters would be used to bolt the back (i.e., roof) and ribs (sides) of the opening.

Equipment required in the On-Site Ore Processing Facility would include a front-end loader, hydraulic excavator or backhoe, low ground pressure dozer, forklift, crane, pickup trucks, and several all-terrain vehicles (ATVs). This equipment would be relatively small in size and used mainly for loading and unloading of materials, maintenance, and facility inspections. Processing equipment would be contained within the process buildings and include filters, clarifiers, thickeners, mixer-settlers, process and reagent tanks, the vacuum dryer, and associated pumps and piping.

Table 2.3-4
Equipment List

Equipment	Congo Pit Mine	Underground Mine
Major Equipment		
Excavator	2	
Motor Grader	2	
Track Dozer	2	
Mine Haul Truck	2	
Wheel Loader	1	
Twin Engine Scraper	3	
Single Engine Scraper	3	
Self-Loading Scraper	1	
Water Truck (3,000 gallons)	1	
Water Truck (8,000 gallons)	1	
Jumbo Face Drills		5
Jack Legs		12
Rock Bolters		7
Scooptrams		10
Haul Trucks		18
Mine Support Vehicles		
Fuel/lube Truck	1	1
Mechanical Service Truck	1	2
Rubber Tire Backhoe with Forklift Attachment	1	
Pickup Trucks, 4WD, ¾-ton	8	
Powder Buggies		1
Bobcat Skidsteer		2
Utility Truck – Flatbed		1
Scissor Truck		1
Man Trips		6
Forklift		1

2.3.4.5 Ore Processing (Milling) Operations

Ore from the Congo Pit and Sheep Underground Mine would either be processed at the On-Site Ore Processing Facility (Section 2.3.4.5.1) or shipped off-site for processing at the Sweetwater Mill (Section 2.3.4.5.2). As discussed at the beginning of Section 2.3, the use of the on-site or off-site processing would not be mutually exclusive to help ensure the most efficient combination of mining and processing could be achieved.

2.3.4.5.1 On-Site Ore Processing

As noted previously, the NRC would be the primary permitting agent for the design, construction, and management of the On-Site Ore Processing Facility. The operation described herein has been discussed with, but not yet approved by, the NRC, and it is included to provide sufficient information for analysis of the potential impacts of the Project addressed in this EIS. As noted at the beginning of Section 2.3, the NRC licensing process would require separate and additional environmental review under NEPA.

For on-site processing, ore would be fed into the hopper/crusher at the front end of the overland conveyor located at the Ore Stockpile. The conveyer would extend approximately 8,000 feet to the On-Site Ore Processing Facility. As proposed by Energy Fuels, the point at which the conveyor crosses into the NRC License Area delineates the separation between the "mine" and the "ore processing or mill" (see Map 2.3-1).

Once ore is received at the Ore Processing Facility, it would be conveyed to an agglomeration drum where reagents are added to the ore to cause the fine particles to bind together or agglomerate. This is done to improve the flow of leaching solutions through the fine-grained ore. After agglomeration, a stacking conveyor would be used to place the agglomerated ore upon the Heap Leach Pad. Agglomerated ore would be stacked in approximately 12 to 15-foot-high lifts on the pad, with ore placement occurring during the day shift. On the night shift, a 4-inch-thick layer of ¾-inch-diameter gravel would be placed over the daily ore to protect against wind and the generation of fugitive dust.

Leach solution distribution pipes with drip emitters would be placed on top of the gravel layer. Sulfuric acid (H_2SO_4) would be dripped onto the gravel and would percolate through the ore to dissolve uranium into a solution. The uranium-enriched solution would collect in drainage pipes and gravity drain into the Collection Pond for further processing. The solution would then be pumped to the Extraction Plant, or if the uranium concentrations were low, the solution would be reapplied to the Heap Leach for further enrichment.

Recovery of uranium from the enriched solution starts at the Extraction Plant with either an SX or an IX system. In an SX system, the extraction stage is the first in the circuit in which the uranium-enriched solution is mixed vigorously with an organic-based extractant and solvent carrier using a series of mechanical agitators to remove impurities. After the solution has been mixed, it would be allowed to settle and separate into two phases. The uranium would be concentrated in the organic solution that would float on top of the barren aqueous solution. The uranium-depleted solution, referred to as raffinate, would be recycled into the Raffinate Pond and used as make-up leach solution. The second stage in the SX circuit, the stripping stage, reverses the SX process and strips the uranium from the organic solution by mixing it with high pH solution, which preferentially extracts the uranium from the organic solution. Similar to the first stage, the mixture would be allowed to settle with the uranium now concentrated in the aqueous solution below, and the barren organic solution floating on top. The barren organic solution would be pumped into the barren organic holding tank and re-used in the extraction circuit.

The IX system would consist of a series of pressurized "down-flow" vessels that are internally screened to maintain ion exchange resin in place while allowing the uranium enriched solution from the Collection Pond to flow through the ion exchange vessels. Once the resin in a vessel becomes loaded with uranium, the vessel is isolated from the normal process flow and the resin is transferred via piping to a separate vessel for elution (i.e., stripping of the uranium and regeneration of the resin).

After being processed at the Extraction Plant, the uranium-rich solution would be sent to the Precipitation and Packaging Plant for production of uranium oxide (U_3O_8) or yellowcake. The production of yellowcake would be accomplished in four major steps: precipitation, washing, drying, and packaging. Washing, drying, and packaging are each contained in separate rooms within the Precipitation and Packaging Plant.

In the precipitation step, the pH of the uranium-enriched solution would be adjusted, as necessary, and hydrogen peroxide (H_2O_2) would be added to precipitate the uranium within a series of tanks. The reagents used in this process would be stored in separate reagent tanks. Precipitated yellowcake solution would then be pumped to a thickener where the precipitate settles to the bottom and the barren solution is decanted off the top.

The partially dewatered yellowcake undergoes pressurized water and air filtration to wash impurities and further dewater the yellowcake. After washing, the yellowcake is collected in a chute and transported on an enclosed conveyor to a zero-emission vacuum dryer. Dried yellowcake is emptied into a drum under a secured ventilation hood and the loaded drums are prepared for shipment. The Packaging Plant would have the capacity to store 220 55-gallon USDOT drums, each containing about 900 pounds of yellowcake. Transportation of processed yellowcake is subject to NRC and USDOT regulations.

2.3.4.5.2 Off-Site Processing

Energy Fuels has identified the possibility of transporting ore from the mining operations to an off-site facility for processing. Ore would be mined and stockpiled as described above; however, the ore would then be trucked off-site for subsequent processing. The most likely facility for off-site processing is the existing Sweetwater Mill in Sweetwater County located approximately 33 miles south of the Project Area along CR 318/4-23 (Crooks Gap/Wamsutter Road).

The Sweetwater Mill is located on privately owned lands by Kennecott. Although the mill is currently in stand-by mode, Kennecott holds an active NRC license for operating the mill (License SUA-1350). Production of yellowcake from the Sweetwater Mill could occur under the conditions of the existing license after appropriate notification is provided to the NRC. Upgrades including construction of new evaporation ponds and a tailings impoundment would be allowed under License SUA-1350.

Ore would be hauled from the Project Area to the Sweetwater Mill using existing county roads (see Map 1.1-1). The Transportation Plan (see Appendix 2-A) describes the current maintenance of access roads that would be used with off-site processing. Energy Fuels would coordinate the maintenance of county roads with Fremont and Sweetwater counties based on maintenance agreements that would be put into effect prior to the start of mining. In addition, Energy Fuels would comply with roadway maintenance agreements in coordination with the Sweetwater Mill. If determined necessary, future widening or upgrades could require future NEPA analysis and permitting actions by the agencies involved. This EIS discloses potential impacts associated with hauling ore from the Sheep Mountain Project Area to the Sweetwater Mill, but approval of these activities would not fall under BLM jurisdiction; therefore, the ROD for this EIS will not include a decision on the transportation of ore along these county roads.

If Energy Fuels moves forward with off-site processing, only mining and initial crushing would occur at the Sheep Mountain Project Area. It is assumed for purposes of this EIS that the disturbance associated with the logistics necessary to transport ore off-site would be within the proposed identified surface disturbance footprint and would be less than the footprint of disturbance identified for on-site processing. Therefore, if off-site processing is chosen, the analysis of surface disturbance presented in this EIS would be considered conservative.

For details into operations and reclamation related to off-site processing at the Sweetwater Mill please see Source Material License SUA-1350 and associated NRC permitting documents (http://www.nrc.gov/site-help/search.cfm?q=SUA-1350&site=ADAMS_Documents_Only).

2.3.5 Reclamation

2.3.5.1 Overview

Surface disturbance and subsequent reclamation would be phased over several years, depending on the uranium production rate, economic conditions, and the availability of mine construction equipment and personnel. As described in the following sections, final reclamation would include: completing the backfill of the Congo Pit with overburden and spoils; plugging and abandoning ventilation shafts and access tunnels; decommissioning and demolishing the facilities and buildings; removing ponds and buried process piping from the processing facility; regrading the surface to approximate original contours; replacing topsoil; and revegetating the disturbed surface with a native plant species approved by the BLM and WDEQ-LQD.

The proposed reclamation plan is intended to return the lands disturbed by the Project to approximate original contours and re-establish pre-mine drainage patterns and densities. Because of the historic disturbance at this location, establishing pre-historic mining contours and conditions on all disturbed land would be difficult to achieve. However, the proposed reclamation plan would attempt to reclaim the area previously disturbed into a safer, more natural environment by establishing through-flowing drainages, vegetation, and natural contours. For instance, the Paydirt Pit, as currently reclaimed, includes a closed depression with 4H:1V slopes, but the proposed re-disturbance and subsequent reclamation would backfill the depression in the Paydirt Pit and establish flow-through drainage.

2.3.5.2 Financial Assurance

The financial assurance would address the proposed activities related to mining. If ore is processed on-site, the NRC would require a separate bond to cover the reclamation of the processing site, primarily with respect to radiological decontamination, decommissioning, reclamation of the heap, and long-term care and maintenance for transfer to the DOE. Prior to the start of the Project, Energy Fuels would be required to update the reclamation performance bond currently in place for WDEQ-LQD Permit to Mine 381C. The amount would be reviewed and approved by the BLM and the WDEQ-LQD, to cover the costs for a third party to complete the Reclamation Plan of the Mine Permit (mining activities only). Under order of forfeiture, the bond for the mine would be payable to the State of Wyoming or the U.S. Secretary of the Interior (under which BLM operates). The bond amount for the mine would be reviewed annually by the BLM and the WDEQ-LQD) and adjusted to reflect changes in cost and in the Project, including Construction and Operation planned for the next year. Once the agencies approve the bond amount, Energy Fuels would submit an irrevocable letter of credit or other approved surety instrument to the WDEQ-LQD, which is the designated agency for holding the bond.

2.3.5.3 Congo Pit

Reclamation of the Congo Pit would involve complex spoils management and cut/fill balancing throughout the life of the Project. Table 2.3-2 provides a disturbance and reclamation summary over the life of the Congo Pit. Concurrent backfill methods would be used as much as possible, but final reclamation of most of the pit would not occur until mining is completed. To the extent practical, underground mine spoils would remain underground; however, excess underground mine spoils would be backfilled and reclaimed within the Congo Pit.

The proposed mine sequence includes the stripping and mining of up to 15 contiguous pits within the overall pit limit (see Figure 2.3-2). Working space constraints would require at least some of the mine spoils from the first six pits to be removed and temporarily stockpiled at the surface. Mine spoils generated by the development of Pits 7 through 15 would be backfilled

internally. When the Congo Pit reaches its economic limit, the 24.5 million cubic yards of spoils previously removed from the pit would be returned to the pit as backfill.

Processed ore (the spent leached material) would not be returned to the pit, resulting in a volume deficit in the Congo Pit of approximately 10 percent. This deficit is expected to be accounted for by the swell factor of the excavated material and by excess spoils from the underground mine.

In addition to topsoil salvage, a minimum of 2 million cubic yards of non-acid forming unclassified earthen material meeting the WDEQ guidelines for suitability of metals and radionuclides would be salvaged from mine excavations, placed in the South Spoils Facility, and used as a final cover over the mine prior to topsoil placement. While the final reclaimed surface configuration would approximate original contours, the Congo Pit would be located in a rather steep upland area and reclamation would use design criteria developed through geomorphic site investigations completed for the pre-mine conditions. Based on current success with geomorphic mine reclamation techniques that create a diverse and erosionally-stable landscape, as has been demonstrated in the Gas Hills (30 miles north of the Project Area), Energy Fuels proposes that this technique be applied to the Congo Pit mine reclamation (Section 2.3.5.5). After the post-mine topography is created, topsoil would be replaced (Section 2.3.5.6) and the seed mix planted (Section 2.3.5.7).

2.3.5.4 Sheep Underground Mine

Energy Fuels proposes the Sheep Underground Mine to be a cut/fill mine where the majority of mine spoils would be successively backfilled within the mine as ore is removed; therefore, limited out-of-mine spoils would report to the surface. Out-of-mine spoil from the underground mine would consist primarily of material from the initial decline development and additional mine development haulage drifts. It is estimated that the total out-of-mine spoil would be approximately 570,000 cubic yards. Out-of-mine spoils would be stockpiled with the Congo Pit spoils until final reclamation when they would be backfilled within the Congo Pit.

Upon completion of mining, all declines, shafts, and vents (including the Sheep I and II Shafts) would be capped and/or sealed by installing a bulkhead. The bulkheads would be at sufficient depth to minimize the potential for mine subsidence to reach the surface. This depth is generally 10 times the mine opening height and would be determined based on the geotechnical factors including the bulking factor and draw angle. The surface disturbances surrounding the shafts would be regraded to approximate original contours (Section 2.3.5.5), topsoil would be replaced (Section 2.3.5.6), and the disturbances revegetated (Section 2.3.5.7).

2.3.5.5 On-Site Ore Processing Facility

If Energy Fuels elects to process all the ore at an off-site processing facility (the Sweetwater Mill), the On-Site Ore Processing Facility would not be constructed, and the existing operator and WDEQ-AML reclamation plans for the southwest portion of the Project Area would be completed.

Reclamation of the On-Site Ore Processing Facility would increase the disturbance associated with the facility to approximately 205 acres, the majority of which is located on private lands. This increase in disturbance from Construction and Operations is due to the requirements for long-term protection of the 11(e)(2) byproduct materials in the Heap Leach Pad. The reclamation plan for the facility would be reviewed and approved by the NRC in accordance with NUREG-1620 (Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites), and the DOE would manage long-term care and monitoring.

The Extraction Plant, Processing and Packaging Plant, and the Treatment Ponds would require decommissioning. Decommissioning would be conducted in accordance with NRC standards, which include the completion of radiological surveys, contamination control, and segregation of materials requiring disposal. Following surveys, buildings and equipment that do not require further decommissioning would be demolished and all salvageable material recycled. Specialized demolition equipment would be brought to the site to break up the concrete foundations and shred the remaining metal structures and equipment.

Material designated as 11(e)(2) byproduct material from the plant decommissioning, liners from the Treatment Ponds, and any other materials requiring disposal as 11(e)(2) byproduct material would be placed in the designated disposal cell of the Heap Leach Pad prior to final cover and capping. After decommissioning, the disturbed areas where the buildings and ponds were located would be regraded for drainage control, topsoil would be replaced, and the areas revegetated.

Standards described in NUREG 1623 address cover design requirements and long-term erosion stability of the spent heap leach material (the processed ore). When the Heap Leach Pad has reached capacity and spent ore has been rinsed and stabilized, the closure cover would be constructed over the Heap Leach Pad. Final cover placement over the pad would provide approximately 10 feet of cap and final cover material. Based on current practice, the final cap and cover would consist of: a clay radon barrier, a coarse-grained capillary break, a soil cover layer, and an erosion protection layer of riprap and/or soil/rock mulch. Most of these materials are anticipated to be available on-site, but clay and riprap material may need to be imported. The final reclamation cover is designed to use riprap and vegetation for erosion control and create a zero water balance on the surface. The reclaimed heap would have gentle slopes of 6H:1V with a maximum height of 134 feet above the primary liner system.

2.3.5.6 Ancillary Facilities and Monitoring Sites

The conveyor system, site utilities, and buildings (i.e., Administration Office, Sheep Underground Shop/Dry, Mine Shop/Warehouse) would be dismantled or demolished. Materials that can be salvaged or sold would be removed from site for re-use. Concrete pads would be broken into manageable pieces and steel buildings disassembled into manageable pieces. Both types of demolition debris would be placed within the Congo Pit, at least 3 feet below the final reclaimed surface, prior to final grading. Wood and other organic debris would be transported to an approved solid-waste landfill for disposal. The disturbances would then be regraded, topsoil would be replaced, and the seed mix would be applied.

Monitoring sites, including wells and SWPPP sites, would be removed or reclaimed once the reclamation of the associated area has been completed and obtained regulatory approval. All the monitoring sites would be reclaimed in accordance with applicable requirements, such as well abandonment specifications.

2.3.5.7 Regrading

Surface disturbances related to exploration or other activities outside the mine and ore processing areas would be regraded to approximate original contours and positive surface drainage would be restored. Reclamation of the Congo Pit was designed using Natural Regrade ™ software to create a geomorphically stable and natural appearing reclaimed surface. The Natural Regrade™ software is designed to increase reclamation potential and decrease erosion. Design features include convex and concave slope profiles, concave channel profiles, a high degree of dissection, multiple small drainage basins, and sinuous channel alignments to increase channel length and decrease gradient.

2.3.5.8 Surface Preparation and Topsoil Replacement

Surface preparation would include spoil sampling prior to topsoil replacement and could include soil amendments to improve the topsoil viability or ripping of the subsurface materials to reduce compaction. Prior to topsoil placement, regraded surfaces and available topsoil would be inspected and/or sampled as necessary to determine the need for amendments, such as agricultural lime or fertilizer. Lime would only be necessary where the materials at the final regraded surface exhibit the potential to develop acidic conditions. This is considered unlikely based on previous overburden analysis and proposed materials handling techniques. If needed, application rates would be determined by sampling of the rough graded surface. Application equipment would be specifically designed for such work and operated by experienced personnel. Once applied, agricultural lime would be incorporated into the regraded surface by discing within 12 hours of application. Fertilizer rates would be determined by sampling of the available topsoil. Fertilizer would be broadcast by equipment specifically designed for application of granular fertilizer. Typically a 2:1:1 (Nitrogen (N): Phosphorus (P):Potassium (K)) fertilizer would be applied at the specified rate.

If a surface area is compacted, the area would be ripped to relieve compaction to a minimum depth of 12 inches in the subsoil, enhancing root penetration. Ripping would parallel the contour at intervals sufficient to "shatter" compacted materials between rip lines on a single pass of the ripping equipment.

Suitable subsoil and topsoil placement would be conducted directly after finish regrading and surface preparation. Once ripping and/or topsoil placement is complete, no equipment traffic, other than as necessary for completion of revegetation, would be allowed over these areas. Topsoil would be placed in an incremental manner to limit haulage over previously placed topsoil. Scrapers would be the primary equipment used to place topsoil with assistance from a dozer and/or motor grader.

Suitable subsoil would be placed at an average thickness of 12 inches, with topsoil placed at a minimum thickness of 6 inches. Isolated areas with difficult terrain may have varied thicknesses of subsoil and topsoil replaced, with a minimum of 6 inches. The topsoil would be disced in preparation for seeding on slopes shallower than 3H:1V. Benefits of contour ripping/discing include precipitation concentration within the small depressions, creation of a protected environment for the seeds, and disruption of flow paths on slopes.

2.3.5.9 Revegetation

The revegetation method for steeper areas would be pitting and broadcast seeding to create a roughened micro surface that minimizes rilling prior to revegetation. Contour ripping and drill seeding would be used for less steep areas.

Pitting and broadcast seeding would be completed within 48 hours after surface preparation. Final surface tillage operations would consist of digging approximately 8,000 to 10,000 pits per acre. Pits would range in width from 8 to 18 inches parallel to the slope and in length from 8 to 24 inches parallel to the contour. Completed pits would have a minimum depth of 6 inches and a maximum depth of 8 inches.

Ripper teeth sufficient to reach below the bottom of the pits would precede pit-forming devices. Pits would be constructed in rows parallel to the contour, so that the downslope flow of water is entrapped by the next row of pits. The pitted surface would have a staggered pattern between adjacent rows of pits. The berm constructed between adjacent pits in the same row would be

sufficient to eliminate any flow of water parallel to the contour. Pits would be constructed prior to seeding and seed would be broadcast immediately thereafter with a broadcast seeder.

Contour ripping followed by discing and seeding using a drill seeder would be used on less steep areas of the site where erosion is not a significant concern. Small areas that cannot be pitted or drill seeded may be ripped, disced, and broadcast seeded. The seed mix, approved by the BLM and WDEQ-LQD, would be uniformly distributed with a mechanical device specifically designed for such work. The ground would be thoroughly raked or dragged immediately after seeding to cover the seed with approximately 0.25-inch of soil. Raking or dragging would be done parallel to the contour. Broadcast seeding without pitting and seeding would be done in all ditch and channel flowline areas.

The permanent seed mixes which would be applied by broadcast and drill methods are presented in Tables 2.3-5 and 2.3-6. Fall seeding would be done between September 15 and the time that frost prevents preparation of a proper seedbed. Spring seeding, if necessary, would be done after the frost leaves the ground and until May 15th.

Table 2.3-5
Broadcast Seed Mixture

Seed Mixture Species	Pure Live Seed Pounds/Acre
Thickspike wheatgrass (*Elymus lanceolatus ssp. lanceolatus*), "Critana"	6.5
Bluebunch wheatgrass (*Pseudoroegneria spicata ssp. spicata*), "Secar"	4.5
Western wheatgrass (*Pascopyrum smithii*), "Rosana"	4.5
Slender wheatgrass (*Elymus trachycaulus ssp. trachycaulus*), "Pryor"	4.5
Needle and thread grass (*Stipa comata*)	1.0
Indian ricegrass (*Achnatherum hymenoides*), "Nezpar"	2.0
Sainfoin (*Onobrychis vicaefolia*), "Eski"	0.5
Wyoming big sage (*Artemesia tridentata wyomingensis*)	0.1
Total	**23.6**

Table 2.3-6
Drill Seed Mixture

Seed Mixture Species	Pure Live Seed Pounds/Acre
Thickspike wheatgrass (*Elymus lanceolatus ssp. lanceolatus*), "Critana"	3.25
Bluebunch wheatgrass (*Pseudoroegneria spicata ssp. spicata*), "Secar"	2.25
Western wheatgrass (*Pascopyrum smithii*), "Rosana"	2.25
Slender wheatgrass (*Elymus trachycaulus ssp. trachycaulus*), "Pryor"	2.25
Needle and thread grass (*Stipa comata*)	0.5
Indian ricegrass (*Achnatherum hymenoides*), "Nezpar"	1.0
Sainfoin (*Onobrychis vicaefolia*), "Eski"	0.25
Wyoming big sage (*Artemesia tridentata wyomingensis*)	0.05
Total	**11.8**

2.3.5.10 Interim Mine Stabilization

The BLM and WDEQ-LQD require interim reclamation plans (also called interim mine stabilization or interim management plans) and would be notified immediately if operations were to cease for an extended period of time. The NRC would have a similar requirement for interim management of the Ore Processing Facility. The basic elements of an interim reclamation plan for this Project are outlined below, and any plan submitted to the agencies for review and approval would require identification of the reason(s) for the temporary cessation of the Project.

Should interim cessation of mining and/or mineral processing be necessary, the operation would not immediately shutdown, but operations would proceed in an orderly manner to achieve site stabilization. It is likely that mineral processing would continue even if mine operations shut down for a period of time, because recovery of uranium oxide would still be possible from the stockpiled ore. It is possible that ore could be received from other mine operations; however, this would require further NEPA analysis separate from this EIS. Roads, stockpile areas, buildings, and facilities within the Project Area necessary to allow for the eventual restart of mining would be identified and preserved. All areas requiring stabilization would be identified, and stabilization procedures would be developed (seeding, reclamation, backfilling, slope stabilization, safety fencing, etc.). Any stored fuel, lubricants, or chemicals would be removed from the site and used at another project or recycled or disposed of at a licensed facility. The mining of any exposed ore would be completed, and the ore would be transferred to the On-Site Ore Processing Facility for processing and/or stabilization or would be shipped to a licensed off-site processing facility.

Active leaching operations at the Heap Leach Pad would be completed. Equipment, tanks, and interior surfaces in the process buildings would be decontaminated and cleaned. Solids would be removed from the Raffinate, Collection, and Holding Ponds. Liners from the ponds would be cleaned using high-pressure water sprays. Fuel, reagents, and other chemical storage on site would be drained and stabilized. Any wastes generated by the decontamination and cleanup process would be disposed of within the Heap Leach Pad, stabilized, and covered. The On-Site Ore Processing Facility, including the pad, ponds, and the buildings would be secured from public access. Site security would be maintained by physical presence and/or remote surveillance.

Energy Fuels would conduct monthly inspections of the Project Area. If an inspection were to discover any breach in the infrastructure, it would be immediately reported, and remedial action would proceed, pending approval from the respective regulatory authority. Environmental monitoring for ground and surface waters, radiological levels, and air particulates would be conducted at the required frequencies. Reclamation bonds would remain in place with the designated agencies to ensure ultimate reclamation of the Project.

2.3.5.11 Evaluation of Reclamation Success

After reclamation, the mine areas would be monitored and the reclamation bond would remain in place until such time that all reclamation conditions of the WDEQ-LQD Permit to Mine 381C have been met; including, but not limited to: establishment of vegetation; stabilization of the site with respect to erosion; and demonstration through monitoring that the groundwater system has been returned to its pre-mine water quality. Some site maintenance would likely be required during the monitoring period. This may include reseeding of areas with poor vegetation, erosion repairs, replacement/cleaning of sediment controls, and maintenance of gates and fencing. Once all permit conditions have been met, Energy Fuels would request release of the reclamation bond and termination of jurisdiction from WDEQ-LQD and the BLM.

2.3.5.12 Post-Closure Management of the On-Site Ore Processing Facility

Once decommissioning, reclamation, and closure of the On-Site Ore Processing Facility are complete and NRC requirements are met, title to all or part of the NRC License Area would be transferred to the DOE for long-term care and maintenance. Prior to title transfer, and termination of the NRC License, NRC and the receiving agency would complete a plan for the long-term care, and at the time of transfer, Energy Fuels would also provide funding for continued care and maintenance. The majority of the processing site to be transferred to DOE would be located on private surface with a small portion of the reclamation area on BLM surface. However, the area has a split mineral estate administered by the BLM and this area would be withdrawn from mineral development in accordance with the applicable rules and regulations such as; Title 43 CFR Part 2091.5-Withdrawals (see Map 2.3-2). The title transfer would also address easements, rights-of-way, and other property rights.

2.3.5.13 Exploration Drilling

Energy Fuels would continue to conduct exploration drilling to identify additional mineral resources and reserves within the Project Area as needed. Energy Fuels has existing permits to conduct exploration and disturbance resulting from exploration would be reclaimed to appropriate standards as soon as feasible after drilling.

2.3.6 Schedule

The Project schedule is dependent on several factors including permitting and licensing as well as the uranium market and available financing. The Sheep Mountain Uranium Project would be constructed under a staggered development schedule. The surface mine (Congo Pit) would be developed sequentially to accommodate the desired mine production and allow for internal backfilling. Development of the underground mine would be deferred for up to 5 years after surface mining commences. If a processing facility is built in the Project Area, its construction is expected to begin 6 months prior to development of the Congo Pit; however, Energy Fuels could elect to initially process ore off-site and construct the On-Site Ore Processing Facility at a later date. If Sheep Mountain ore is processed at the Sweetwater Mill, construction and rehabilitation activities are expected to begin 3 months prior to development of the Congo Pit.

Based on currently identified resources, the Congo Pit would operate for approximately 8 years, and the Sheep Underground Mine would have a mine life of approximately 11 years. Ore processing would continue for a number of years after the mines are closed. Reclamation of the mines and associated facilities would commence immediately after mine closure, and reclamation of the processing facility would commence as soon as processing is completed. The overall project life is anticipated to be 20 years from initial construction to final reclamation. The project schedule is not anticipated to change due to off-site processing.

Energy Fuels proposes operating 2 to 3 shifts per day, 5 to 7 days per week, to complete Construction and Operation. This schedule could be modified if market conditions or other considerations warrant a change. The On-Site Ore Processing Facility would operate on 3 daily shifts (8 hours per shift), 7 days per week, and 365 days per year.

2.3.7 Workforce

Total workforce requirements are shown below in Tables 2.3-7 through 2.3-12. Because the Project Area is located in a remote portion of southwest Fremont County, Energy Fuels expects that the Project would attract workers from surrounding rural areas and towns, including Riverton (62 miles), Lander (57 miles), Jeffrey City (8 miles), and Rawlins (67 miles). Some workers could also commute to the Project Area from Casper (105 miles). Given the relatively

long distances between the Project Area and population centers, the local workforce is defined to include workers from Fremont and Carbon counties, and the non-local workforce is defined to include workers who live in other counties (and states). Non-local construction workers would be expected to temporarily relocate to Fremont County for the duration of their employment period. Non-local operational workers would be permanent employees and would be expected to relocate to either Fremont or Carbon counties.

Mine personnel would complete safety training as required by MSHA and State Mine Inspection Office. Personnel in the On-Site Processing Facility would complete industrial safety training as required by MSHA and radiological safety training as required by the NRC. Personnel and visitors would wear PPE in areas where required. Radiometric scanning would be conducted on all personnel and visitors entering or exiting the On-Site Ore Processing Facility. Personnel within the NRC Restricted Area would wear individual monitors and/or badges.

2.3.7.1 Construction

On-Site Processing

During the Construction phase, approximately 20 workers would be required to construct the Congo Pit and associated mine facilities (e.g., ore stockpile, diversion channels, and sediment and collection ponds). The Congo Pit would not require a large volume of topsoil stripping (due to historic disturbance); therefore, these construction personnel would also operate the Congo Pit. Approximately 50 workers would be required to construct the new workings for the Sheep Underground Mine (see Table 2.3-7). The Congo Pit and Sheep Underground Mine would not be constructed simultaneously. As noted in Section 2.3.6, Energy Fuels expects that construction of the Sheep Underground Mine would be deferred for up to 5 years following the start of open pit mining operations. Approximately 110 workers would be required to construct the On-Site Ore Processing Facility, including the Heap Leach Pad. Approximately 100 of these workers would be contractors and 10 would be quality control personnel.

Table 2.3-7
Sheep Mountain Construction Workforce with On-Site Processing[1]

Project Component	Duration	# of workers (range)
Congo Pit	2-4 months	20
Sheep Underground Mine	18 months	50
On-Site Ore Processing Facility	9 months	110
	Total	**180**

[1] Source: Energy Fuels, 2013a.

Energy Fuels expects that local workers would comprise approximately 50 percent of the Construction workforce required to construct the Congo Pit and associated mining facilities. Approximately 50 percent of the Construction workforce for the Sheep Underground Mine is also expected to consist of local workers. Pre-engineered building and siding suppliers would mobilize company ironworkers, sheet metal installation crews, mobile crane operators, man- and forklift operators, and welders to construct the buildings. Smaller, local contractors would be used to supply materials, perform earthwork, and construct the smaller buildings.

Both general and specialized contractors would be required to construct the On-Site Ore Processing Facility. A general contractor experienced in mill construction would be hired to build most of the facility and specialized contractors would be contracted to erect the larger tanks, install the liners, and construct the overland conveyor. Energy Fuels would encourage its contractors to review, qualify, and employ as many skilled and unskilled workers from the local

area as possible; however, Energy Fuels expects that the construction workforce for the processing facility would consist of approximately 30 percent local workers and 70 percent non-local workers.

Off-Site Processing.

If ore is processed off-site, construction personnel in the Project Area would include 70 workers to construct the Congo Pit and Sheep Underground Mine (see Table 2.3-8). Although construction personnel for the Sweetwater Mill are not included in the workforce estimates for the Proposed Action, Energy Fuels anticipates that approximately 55 workers would be required for approximately 6 months to construct and refurbish facilities at the Sweetwater Mill (Energy Fuels, 2014b).

Table 2.3-8
Sheep Mountain Construction Workforce with Off-Site Processing[1]

Project Component	Duration	# of workers (range)
Congo Pit	2-4 months	20
Sheep Underground Mine	18 months	50
	Total	**70**

[1] Source: Energy Fuels, 2013a.

2.3.7.2 Operations

On-Site Processing

Energy Fuels expects that the workforce associated with mining operations would include approximately 169 mining personnel (see Table 2.3-9). Most of these workers would be full-time employees, but some contractors would be required. During operation of the Congo Pit, the number of miners required would increase from the 20 needed during pit construction to the full operational workforce of 41 miners. Energy Fuels expects that many of the workers hired to construct the Sheep Underground Mine would remain during mining operations and that the underground mining workforce would increase to 128 miners. Operation of the Heap Leach Pad and Ore Processing Facility would require approximately 35 workers. The Congo Pit and Sheep Underground Mine workforces are expected to consist of approximately 50 percent local workers and 50 percent non-local workers. The workforce for the Heap Leach Pad and On-Site Ore Processing Facility is anticipated to include approximately 35 percent local workers and 65 percent non-local workers.

Table 2.3-9
Sheep Mountain Operational Workforce with On-Site Processing[1]

Project Component	Duration	Number of Workers
Congo Pit	8 years	41
Sheep Underground Mine	11 years	128
On-Site Ore Processing Facility	12 to 16 years	35
	Total	**204**

[1] Source: Energy Fuels, 2013a.

Off-Site Processing.

If ore is processed off-site, operational personnel in the Project Area would include 169 workers at the Congo Pit and Sheep Underground Mine, and 15 truck drivers hauling ore from the Project Area to the Sweetwater Mill (see Table 2.3-10). Local workers are expected to account for all ore haul truck drivers. Although operational personnel for the Sweetwater Mill are not included in the workforce estimates for the Proposed Action, Energy Fuels expects that, due to higher recovery rates, approximately 120 workers would be required to process ore at the Sweetwater Mill (Energy Fuels, 2014b).

Table 2.3-10
Sheep Mountain Operational Workforce with Off-Site Processing

Project Component	Duration	Number of Workers
Congo Pit[1]	8 years	41
Sheep Underground Mine[1]	11 years	128
Ore Haul Truck Drivers[2]	12 to 16 years	15
	Total	**184**

Sources:
[1] Energy Fuels, 2013a.
[2] Sheep Mountain Transportation Plan.

2.3.7.3 Reclamation

On-Site Processing

Reclamation would require fewer employees than Construction or Operations. With an On-Site Ore Processing Facility, the final reclamation workforce would include approximately 54 workers (see Table 2.3-11). The majority of the mining reclamation would be concurrent with mining, so employees working at the Congo Pit and Sheep Underground Mine would complete most of the reclamation during mining. Larger equipment could be utilized during reclamation to reduce costs and shorten the Reclamation phase. The Reclamation workforces for the Congo Pit, Sheep Underground Mine and Heap Leach and Ore Processing Facility are expected to consist of approximately 50 percent local workers and 50 percent non-local workers.

Table 2.3-11
Sheep Mountain Reclamation Workforce with On-Site Processing[1]

Project Component	Duration	Number of Workers
Congo Pit	5 years	24
Sheep Underground Mine	1-2 years	6
On-Site Ore Processing Facility	2-3 years	24
	Total	**54**

[1] Source: Energy Fuels, 2013a.

Off-Site Processing

If ore is processed off-site, final reclamation activities in the Project Area would include 30 workers to close and reclaim the Congo Pit and Sheep Underground Mine (see Table 2.3-12). Although reclamation personnel for the Sweetwater Mill are not included in the workforce estimates for the Proposed Action, Energy Fuels estimates that approximately 24 workers would be required during closure and final reclamation of the Sweetwater Mill (Energy Fuels, 2014b.)

Table 2.3-12
Sheep Mountain Reclamation Workforce with Off-Site Processing[1]

Project Component	Duration	Number of Workers
Congo Pit	5 years	24
Sheep Underground Mine	1-2 years	6
	Total	**30**

[1] Source: Energy Fuels, 2013a.

2.3.8 Traffic

Traffic estimates associated with the Proposed Action are shown below in Tables 2.3-13 through 2.3-18. Traffic and access associated with the Proposed Action are described in detail in the Transportation Plan for the Sheep Mountain Uranium Project (see Appendix 2-A). Given the Project Area's remote location and the existing network of regional roads, workers in the Project Area are expected to live in surrounding rural areas and in the towns of Riverton, Lander, Jeffrey City, and Rawlins. At this time, Energy Fuels does not have definitive plans to provide bussing for employees; however, it might be considered during Operations. Carpooling is anticipated given the remote locations of the Project Area.

2.3.8.1 Construction

On-Site Processing

Traffic related to construction of the On-Site Ore Processing Facility is estimated to include between 40 and 61 vehicle round-trips per day during the first 6 months of project development. Construction of the processing facility would overlap with construction activities at the Congo Pit for approximately 3 months in Year 1, when construction traffic would include between 48 and 71 vehicle round-trips per day (see Table 2.3-13). Construction of the Sheep Underground Mine would include between 18 and 25 vehicles for approximately 18 months sometime after Year 1.

Table 2.3-13
Sheep Mountain Construction Traffic with On-Site Processing
(estimated vehicle round-trips per day)

Project Component	Project Schedule	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit	12 months in Year 1	8 -10[1]	0[2]	8 - 10
Sheep Underground Mine[3]	18 Months after Year 1	18 - 25[4]	0[2]	18 - 25
On-Site Ore Processing Facility	9 Months in Years 0 - 1	35 - 55[5]	5 - 6[2, 6]	40 - 61

Assumptions:
[1] Assumes that between 15 and 20 workers are required to construct the Congo Pit. Vehicle estimates include workers' personal vehicles, assuming two workers per vehicle.
[2] Assumes that heavy equipment remains on-site during construction.
[3] Construction of the Sheep Underground Mine would be deferred for up to 5 years depending on financing and market conditions.
[4] Construction of the Sheep Underground Mine would include between 15 and 30 workers to drive the double-entry decline and 20 workers to conduct rehabilitation in the mine. Vehicle estimates include workers' personal vehicles, assuming two workers per vehicle.
[5] Includes personal vehicles for 70 to 110 processing facility construction workers, assuming two workers per vehicle.
[6] Includes 302 truckloads of materials delivered between 135 and 270 days. Assumes that durable rock material is obtained off-site.

Off-Site Processing

If ore is transported to the Sweetwater Mill for processing, construction traffic to the Project Area would include between 8 and 10 vehicle round-trips per day for the Congo Pit and between 18 and 25 vehicle round-trips per day for the Sheep Underground Mine (see Table 2.3-14). Additional traffic would result from construction and refurbishment of the Sweetwater Mill.

Table 2.3-14
Sheep Mountain Construction Traffic with Off-Site Processing
(estimated vehicle round-trips per day) [1]

Project Component	Project Schedule	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit	12 months in Year 1	8 -10	0	8 - 10
Sheep Underground Mine	18 Months after Year 1	18 - 25	0	18 - 25
[1] See assumptions noted in Table 2.3-13.				

2.3.8.2 Operations

On-Site Processing

Traffic related to operation of the Sheep Mountain Uranium Project with an On-Site Processing Facility is expected to include between 55 and 107 vehicle round trips per day. The lower estimate assumes that the Project is operating at less than full capacity with partial workforce levels and the upper estimate assumes that the Project is operating at full capacity with peak workforce levels. Operational traffic would be highest sometime after Year 1, when the Congo Pit and Sheep Underground Mine would both be operating. Prior to that time, operations-only traffic would include between 23 and 43 vehicle round-trips per day (see Table 2.3-15).

Table 2.3-15
Sheep Mountain Operational Traffic with On-Site Processing
(estimated vehicle round trips per day)

Project Component	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit	10 - 21[1]	0[2]	10 - 21
Sheep Underground Mine	32 - 64[3]	0[2]	32 - 64
On-Site Ore Processing Facility	10 - 18[4]	3 - 4[5]	13 - 22

Assumptions:
[1] Includes personal vehicles for between 20 and 41 Congo Pit workers, assuming two workers per vehicle.
[2] Assumes that mine support vehicles, water trucks and mechanical service trucks remain on-site.
[3] At full production, the Sheep Underground Mine is expected to employ 128 workers over two shifts. Lower production levels may require only one daily work shift. The estimated vehicle range includes personal for between 64 and 128 underground mine workers and assume two workers per vehicle.
[4] Includes personal vehicles for 20 to 35 processing facility workers, assuming two workers per vehicle.
[5] Includes approximately one yellow cake shipment per week, one delivery of sodium chlorate per week, nine shipments of sulfuric acid per week, two shipments of miscellaneous chemicals (sodium carbonate, hydrogen peroxide, sodium hydroxide, hydrated lime) per week, one fuel delivery per day, and two shipments per week of domestic solid wastes to the Jeffrey City Transfer Station.

Off-Site Processing

If Sheep Mountain ore is processed at the Sweetwater Mill, operational traffic is estimated to include between 49 and 100 vehicle round-trips per day to the Project Area (commuting workers) and between 36 and 81 vehicle round-trips per day to the Sweetwater Mill (ore haul trucks), for a total of 85 to 181 vehicle round-trips per day (see Table 2.3-16). During the Project's early years, when only the Congo Pit would be producing ore, total operational traffic would include approximately 64 vehicle round-trips per day. Additional traffic, primarily related to commuting workers, would occur during operations at the Sweetwater Mill.

Table 2.3-16
Sheep Mountain Operational Traffic with Off-Site Processing
(estimated vehicle round trips per day)

Project Component	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit[1]	10 - 21	0	10 - 21
Sheep Underground Mine[1]	32 - 64	0	32 - 64
Ore Haul Trucks	7 – 15[2]	36 – 81[3]	43 – 96

Assumptions:
[1] See assumptions noted in Table 2.3-15.
[2] Includes personal vehicles for between 7 and 15 ore haul truck drivers.
[3] Assumes between 7 and 15 haul trucks make up to five round trips per day between the Project Area and the Sweetwater Mill. Assumes that haul trucks remain on-site when not in use.

2.3.8.3 Reclamation

On-Site Processing

Traffic associated with final reclamation of the Congo Pit would include between 10 and 12 vehicle round-trips per day. Final reclamation of the Sheep Underground Mine and ore processing facility would occur after the Congo Pit's closure, and would include between 22 and 27 vehicle round-trips per day (see Table 2.3-17).

Table 2.3-17
Sheep Mountain Reclamation Traffic with On-Site Processing
(estimated vehicle round trips per day)

Project Component	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit	10 - 12[1]	0[2]	10 - 12
Sheep Underground Mine	2 - 3[3]	0[2]	2 - 3
On-Site Ore Processing Facility	10 - 12[4]	10 - 12[5]	20 - 24

Assumptions:
[1] Includes personal vehicles for between 20 and 24 reclamation workers, assuming two workers per vehicle
[2] Assumes that heavy vehicles required for mine reclamation remain on-site.
[3] Includes personal vehicles for four to six reclamation workers, assuming two workers per vehicle.
[4] Includes personal vehicles for between 20 and 24 reclamation workers, assuming two workers per vehicle.
[5] Assumes that materials for the radon barrier (i.e. clay), riprap and other durable rock layers are sourced off-site.

Off-Site Processing

If Sheep Mountain ore is processed at the Sweetwater Mill, traffic during final reclamation of the Congo Pit would include between 10 and 12 vehicle round-trips per day. Traffic during final reclamation of the Sheep Underground Mine would include between 2 and 3 vehicle round-trips per day (see Table 2.3-18). Additional traffic would result from final reclamation of the Sweetwater Mill.

Table 2.3-18
Sheep Mountain Reclamation Traffic (estimated vehicle round trips per day) [1]

Project Component	Light Vehicles	Heavy Vehicles	Total Vehicles
Congo Pit	10 - 12	0	10 - 12
Sheep Underground Mine	2 - 3	0	2 - 3
[1] See assumptions noted in Table 2.3-17.			

2.3.9 Transportation

Transportation to and from the mine and processing facility, regardless of whether the processing facility is on- or off-site, is subject to USDOT regulations, including requirements for a spill response plan when shipping hazardous materials. Transportation of radiological materials also must meet NRC regulations (10 CFR Part 71). Personnel would commute to and from the Project Area from Riverton, Lander, or Rawlins on a daily basis. Deliveries to the Project Area would include diesel fuel, equipment and spare parts, explosives for the mine, potable water, and, potentially, chemicals for ore processing.

Energy Fuels estimates weekly shipments of yellowcake from the processing facility, whether on- or off-site using a 25 ton capacity tractor-trailer, typically carrying 43 drums of yellowcake. The drums would be packed tightly using wooden cribbing to prevent shifting of the load during transport. The transport trucks would be licensed and insured to transport low-level radioactive material. The yellowcake would likely be transported to the ConverDyn enrichment facility located in Metropolis, Illinois or the Cameco facility in Port Hope, Ontario, which are about 1,300 and 1,750 miles (respectively) from either the on-site or off-site processing facility or mill. With off-site processing, haulage traffic would also be required to transport ore from the Project Area to the Sweetwater Mill (see Appendix 2-A, Transportation Plan). Additional traffic from the Project Area would include routine solid waste disposal at the nearest landfill. For details concerning additional traffic related to processing at the Sweetwater Mill, see Source Material License SUA-1350 and associated NRC permitting documents.

Within the Project Area, almost all new roads would be constructed on spoils from the Congo Pit or Sheep Underground Mine. The only new roads would include: extension of the Crooks Gap Road to the mine; the road through the Congo Pit from the Ore Stockpile to the Hanks Draw Spoils Facility; temporary roads to topsoil stockpiles, various secondary roads around the Congo Pit; and if the On-Site Ore Processing Facility is constructed, a section of road from the facility to the mine and secondary roads within the facility.

Roads would be constructed using sandy gravel produced on site or from an outside source. The material would pass a 3/8-inch screen. Roads would be crowned and ditched with a maximum width of 60 feet allowing for two-way heavy equipment traffic. Culverts would be installed to convey runoff from all first and second order drainages that might be crossed. Full time maintenance of on-site roads would be performed using a motor grader, and a water truck would be used for dust control.

2.3.10 Waste Management

Wastes generated would include liquid and solid wastes, including wastes classified as 11(e)(2) byproduct materials by the NRC. Spill contingency plans are discussed first, and then the liquid and solid waste management plans are discussed. For details into spill contingency related to off-site processing at the Sweetwater Mill, see Source Material License SUA-1350 and associated NRC permitting documents.

2.3.10.1 Spill Contingency Plans

Energy Fuels' spill contingency plans for mine operations, ore processing, and transportation are described below.

Mine Operations

Daily mine operations use a variety of fuels, lubricants, antifreeze, road treatment chemicals (e.g., magnesium chloride), as well as other chemicals. The fuel and lubricant storage pads would be enclosed within berms capable of containing any spill from tanks plus adequate freeboard. The pad and berm would be constructed of compacted clay amended soil, a synthetic liner, and/or a geosynthetic clay liner (GCL). Mine shops and warehouses would be equipped with drain and waste containment sumps to contain any spills. Solvent stations used for cleaning parts would recycle the solvent back to a drum or tank. All spilled fuels and waste from lubricant and solvent stations would be recycled and/or disposed of off-site at a licensed facility.

Ore Processing

The on-site ore processing buildings and storage tanks would be equipped with concrete containment walls and sumps to contain spills, leaks, and periodic equipment wash down water. Fueling and lubricant stations within the processing area would be contained in berms similar to those described for the mine operations; however, concrete walls may also be used given the more permanent nature of the processing facility.

The On-Site Ore Processing Facility, including the Heap Leach Pad, is designed to contain all flows and spills and the PMP event as described in Section 2.3.3.8. The Heap Leach Pad is designed with a positive drain and collection system which first drains to the Collection Pond (see Figure 2.3-1). Any spill not contained in the processing buildings, even in the event of complete loss of power, would gravity drain to the Raffinate Pond, which in turn would overflow into the Collection Pond under extreme conditions. Finally, the Collection Pond is designed with an overflow to the Holding Pond and has sufficient design capacity for all operational solutions and containment of the PMP over the entire On-Site Ore Processing Facility, including an allowance for freeboard and potential wave action.

Transportation

Transportation along public roads both to and from the mine and the ore processing facilities would be subject to USDOT regulations including the requirements for a spill response plan when transporting hazardous materials (e.g., fuel, chemical reagents, explosives, and yellowcake). Transportation along public roads both to and from the mine and the ore processing facilities would be subject to NRC's regulations as well; however, NRC does not require by regulation a spill response plan. Material transportation to the Project would primarily involve diesel fuel, consumable items such as chemical reagents for ore processing, underground mine materials, explosives, equipment, and spare parts. Materials transportation

from the Project would primarily consist of yellowcake, which is a solid product packaged in USDOT approved 55 gallon drums for shipment.

2.3.10.2 Liquid Waste Management

The Project would generate several different types of liquid wastes, including: stormwater runoff, domestic liquid waste, waste petroleum products and chemicals, native groundwater, and processing waste (11(e)(2) byproduct material).

Stormwater Runoff

Energy Fuels would update their SWPPP as necessary to accommodate for the proposed mining and processing activities. Surface water management practices would control runoff in accordance with state and federal regulations. Construction of the Congo Pit and associated spoils facilities would require extensive surface water control – a system of diversions, sediment ponds, and collection ponds, which are described in detail in Sections 3.7 and 3.9.2.3 of the WDEQ-LQD Permit to Mine 381C application revision. Straw wattles, sediment fencing, sediment ponds and other typical BMP's would also be used in smaller disturbance areas to limit erosion and sediment transport from the site.

Domestic Liquid Waste

Domestic liquid wastes would be disposed of through a permitted septic leach system at the processing facility.

Waste Petroleum Products and Chemicals

These wastes would be typical for a mining operation and would include antifreeze, fuels, lubricants, or other products used in daily operations and maintenance, Energy Fuels would be a Conditionally Exempt Small Quantity Generator of hazardous wastes, per EPA definition. Waste chemicals would be clearly labeled and stored in sealed containers above ground in accordance with the requirements of the EPA. These wastes would be periodically collected by a commercial business for recycling or disposal in a licensed disposal facility.

Groundwater

Groundwater would be recovered during well installation, sample collection, aquifer testing, and surface and underground mine dewatering. For all but mine dewatering, the groundwater would be discharged to the surface under the provisions of a general Wyoming Pollutant Discharge Elimination System (WYPDES) permit, in a manner that mitigates erosion, or would be reused in drilling. Groundwater from mine dewatering would be used for dust suppression and similar general uses. This water would be stored in a lined holding pond on the Ore Stockpile. After the first couple of years of operation, the dewatering rate is anticipated to exceed the consumption rate, based on the site-wide water balance (Energy Fuels, 2014a). The amount of excess would depend on whether or not the On-Site Ore Processing Facility is constructed. The excess groundwater would be treated and discharged to the surface, in which case Energy Fuels would obtain a permit for a water treatment and discharge system (Section 2.3.11.1).

Ore Processing Waste (11(e)(2) Byproduct Material)

If the On-Site Ore Processing Facility is constructed, liquid waste meeting the definition of 11(e)(2) byproduct material would be generated within the facility. The liquid waste would include:

- A 40 gpm extraction plant bleed stream;
- A 10 gpm bleed stream from the precipitation circuit;
- Stormwater runoff from the facility area; and
- Wash down water from the facility area.

As described in Section 2.3.3.9, liquid 11(e)(2) byproduct waste would be disposed of within the Holding Pond.

2.3.10.3 Solid Waste Management

Solid wastes would be produced during the Project. If the On-Site Ore Processing Facility is constructed, some of these wastes would be classified as NRC 11(e)(2) byproduct material.

The solid non-11(e)(2) byproduct materials would include: non-hazardous materials typical of office facilities and mining operations, such as paper, wood products, plastic, steel, biodegradable items, and sewage sludge; and hazardous materials also typical of mining operations, such as waste petroleum products and used batteries. The solid non-11(e)(2) byproduct materials would be recycled or disposed of off-site at a licensed facility. Energy Fuels would be a Conditionally Exempt Small Quantity Generator of hazardous wastes, per EPA definition. As discussed in Section 2.3.5.6, some of the demolition debris generated during reclamation would be buried on-site.

If the On-Site Ore Processing Facility is constructed, solid waste classified as 11(e)(2) by product material would include:

- Inert filter media (e.g., filter cloths or bags);
- Filter cake from the extraction circuit;
- Solid waste byproduct in the form of a sludge that would be formed if the optional water treatment processing system is implemented,
- Process equipment that could not be decontaminated during facility decommissioning;
- Solids precipitated in the Holding Pond;
- The processed ore (spent heap leach material); and
- Domestic solid wastes.

During Construction and Operation, all the solid 11(e)(2) byproduct material, other than the processed ore in the Heap Leach Pad, would be temporarily held in an interim solid waste management area identified within the Processing Facility. During reclamation, final disposal of this material would be in a segregated section of the Heap Leach Pad.

2.3.11 Water Management Plans

2.3.11.1 Groundwater

Both the Congo Pit and Sheep Underground Mine would require dewatering for operations. Based on the depth to groundwater, dewatering of the Congo Pit would be required starting

during the first year of mining operations. The dewatering of the pit would be accomplished by pumping from sumps in the pit floor or dewatering wells adjacent to the pit. The dewatering rates would range from about 260 gpm in the first year, increase to about 630 gpm in the fourth year, and then decline to about 330 gpm in the eighth year of mining the pit.

Dewatering of the Sheep Underground Mine would be required before re-opening the mine in order to evaluate the condition of the shafts and underground workings. Dewatering from the Sheep I and/or II Shafts is scheduled to begin during the Construction phase and is anticipated to require continuous pumping at a rate of 750 to 1,000 gpm for a period of approximately 9 months to 1 year (Energy Fuels, 2014a). After initial dewatering of the Sheep Underground Mine and during operations, a steady-state dewatering rate of 250 to 400 gpm is expected, based on historical information (Energy Fuels, 2014a). This water would be used for ore processing, dust suppression, cleaning and maintenance, fire suppression, and other uses throughout the Project. Higher usage rates would occur during the summer months when more water is evaporated and more water is needed for dust suppression. For details into water management related to off-site processing at the Sweetwater Mill, see Source Material License SUA-1350 and associated NRC permitting documents.

During development of the underground mine and once the underground mine is operational, an average of approximately 20,000 gallons of water would be consumed per day in the ventilation system and during drilling operational drilling. This water would be made available by continuous dewatering of the underground mine.

Current estimates indicate that, during the first couple of years of operation, all water from the dewatering of the Congo Pit and the Sheep Underground Mine would be consumed on-site for dust suppression and similar general uses. After the first couple of years of operation, the dewatering rate is anticipated to exceed the consumption rate, based on the site-wide water balance (Energy Fuels, 2014a). The amount of excess would depend on whether or not the On-Site Ore Processing Facility is constructed. Energy Fuels would obtain a permit to discharge the excess water to Crooks Creek. Based on the groundwater quality data, it is likely the water would require treatment for radium and some metals prior to discharge; all the parameters of potential concern would be amenable to treatment (Energy Fuels, 2014a). Prior to use or treatment, the water would be stored in a lined holding pond on the Ore Stockpile. The treatment system would be designed for a retention time of 3 days and a treatment rate of 200 gpm and the lined holding pond capacity would be 155,550 cubic feet (Energy Fuels, 2014a). water would be treated and discharged to Crooks Creek in which case, Energy Fuels would permit a water treatment and discharge system. Water treatment and discharge would likely be needed if the ore is not processed on-site, because this would significantly reduce the mine's water consumption requirements.

The Wyoming AML program has plans to reclaim the McIntosh Pit in 2015. The extent of WDEQ-AML's activities is described in Chapter 5. At this time, AML plans to backfill the pit lake to above the water table, restore surface drainage through the area while maintaining a small impoundment/reservoir in the pit, apply topsoil, and revegetate the regraded surface.

2.3.11.2 Potable Water

Energy Fuels anticipates 50 gallons of potable water would be consumed per day per person for showering and miscellaneous uses. Additional potable water would be required in the Ore Processing Facility for laundry facilities. During Construction, potable water would be purchased and trucked on-site from Jeffrey City. This water consumption would equal approximately 2,000 gallons per day and could be accommodated by one truck or less per day. During operations, a

potable water treatment system would be installed that could provide approximately 10,000 gallons per day assuming 200 personnel.

2.3.11.3 Surface Water

Energy Fuels has a SWPPP under their WDEQ-LQD Permit to Mine 381C. The SWPPP would be updated as necessary. Per the requirements of the WDEQ-LQD permit, Energy Fuels has designed and would install an extensive system of channels, sediment ponds, and collection ponds to control surface water runoff in the ephemeral drainages in the Project Area (Section 2.3.4.2). To help protect the perennial Crooks Creek to the west of the Project Area, a 500-foot buffer along the eastern edge of the creek is proposed within which there would be no surface disturbance.

Energy Fuels anticipates that, after the first couple of years of operation, it would be necessary to discharge water from the dewatering system to Crooks Creek. Should water discharge be considered, Energy Fuels would submit an application to discharge mine water under the WYPDES Program, which would likely require treatment for radium and some metals (Energy Fuels, 2014a). In addition to obtaining a WYPDES permit for a discharge to Crooks Creek, BLM approval and possibly additional NEPA analysis would be needed.

The On-Site Processing Facility, which would be regulated by the NRC, would be required to incorporate surface water management practices which account for the PMP and PMF events. Stormwater runoff from the adjacent lands would be prevented from interacting with the Heap Leach, Treatment Ponds, and associated buildings and would be detained within an existing, permitted impoundment northeast of the facility. Stormwater runoff from the Heap Leach Pad and associated buildings would be contained in the triple-lined holding pond with double leak detection where it would be removed via evaporation.

2.3.12 Baseline Data Collection and Monitoring

2.3.12.1 Overview

Baseline data collection would be completed before construction. Monitoring of the Project Area is on-going in accordance with the requirements of WDEQ-LQD Permit to Mine 381C and would extend throughout the life of the Project, including Operational Monitoring and monitoring during Reclamation and Decommissioning.

Some monitoring would be conducted for the life of the Project, while other monitoring would depend on the phase of the Project. The monitoring results would be periodically evaluated by the Energy Fuels, through the WDEQ-LQD and NRC Annual Reports, which would be shared with BLM, to ensure the actual conditions do not differ significantly from the anticipated conditions. The monitoring results and Annual Reports would also be provided to the various agencies, including BLM, for review and evaluation of the adequacy of the reclamation bond.

Baseline data collection and monitoring comply with all state and federal regulations, including but not limited to:

- BLM 3809.401 (4)and BLM 3809.420
  - Primary focus is surface and groundwater quality and quantity; air quality; revegetation stability; noise; and wildlife
- WDEQ-LQD
  - Primary focus is mine reclamation; revegetation stability, diversity, and productivity;

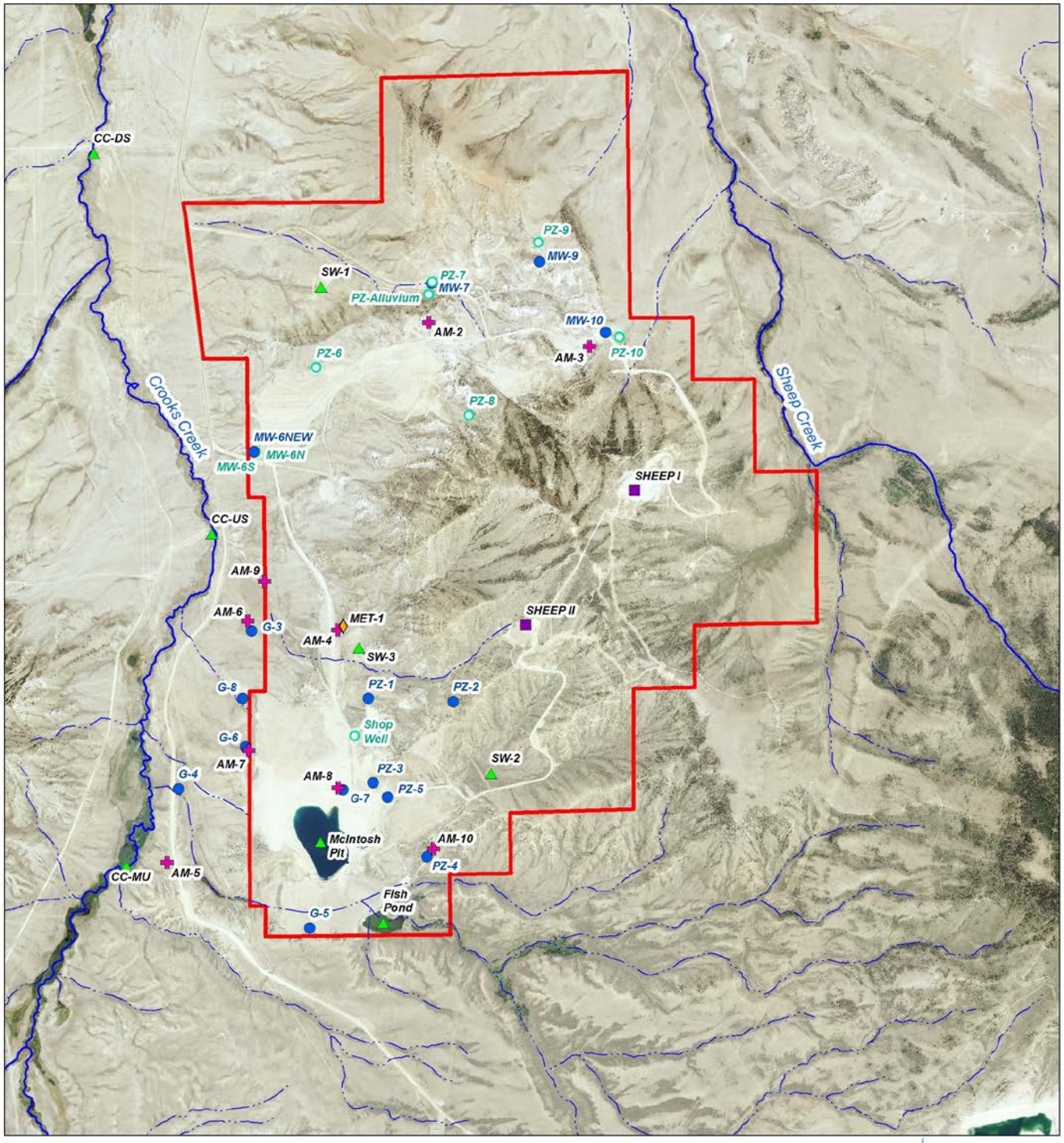
surface and groundwater quality and quantity; and erosional stability

- WDEQ-AQD
  - Primarily fugitive dust and carbon emissions
- WDEQ-WQD
  - Primarily SWPPP and surface water discharge
- NRC
  - Primary focus is environmental pathways (air, water, soils, flora, and fauna) for radiological and non-radiological constituents
  - Radiation exposures both occupational and to the general public
- EPA
  - Primary focus is radon gas emissions regulated under the National Emissions Standards for Hazardous Air Pollutants (NESHAPS)
- MSHA
  - Primary focus is worker health and safety including fugitive dust; underground working levels with respect to gases (including radon in underground mines); exposures to chemical and solvents; and noise
- Wyoming State Mine Inspector
  - Primary focus is worker health and safety
- Wyoming State Engineer's Office
  - Primary focus is surface water impoundments and water rights
- Wyoming Game and Fish Department and U.S. Fish and Wildlife Service
  - Primary focus is wildlife

Additional details on the monitoring for each environmental category (e.g., Vegetation) are discussed in Chapter 4.

2.3.12.2 Baseline Data Collection

Pre-operational baseline data collection has been completed in consultation with WDEQ and BLM in accordance with appropriate regulations and guidance documents. NRC will review Energy Fuels' baseline information once an application is filed with the NRC. In cases of overlapping guidance and/or regulation, the most extensive requirements have been met. The data collection program has been in place for more than 1 year and followed the prescribed quality control and assurance requirements. Map 2.3-3 shows the location of pre-operational baseline data collection locations for groundwater and surface water, air quality, and radiological parameters In addition, pre-operational surveys and sampling programs have documented baseline conditions relative to wildlife, vegetation, soils, and climate. Pertinent data is summarized in Part 8 in Energy Fuels' Plan of Operations. As noted in Section 2.2, much of the Project Area was disturbed by historic mining. Therefore, the baseline data collection included delineating the historic disturbance as well as establishing baseline conditions in undisturbed areas.



Map 2.3-3
Pre-Operational Monitoring and Sample Locations

Sheep Mountain Project Area

Monitoring Points
- Shaft
- Weather Station
- Air
- Surface Water

Groundwater Monitor Wells
- Current
- Historic

N

0 4,000 Feet

No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM

Air

Map 2.3-3 shows the location of current air monitor stations which monitor radioparticulates, radon-222, and direct gamma radiation; no site PM_{10} or $PM_{2.5}$ data have been collected to date. Eight of the nine air monitors (AM-1, AM-2, and AM-4 through AM-9) have been collecting continuous air samples for a minimum of 1 year. Air Monitor 3 was re-located to a new location, AM-10, in the fall of 2012, upwind of the proposed processing facility based on monitoring of wind direction. Air Monitors 2 and 10 are well removed from the mineral processing facilities and were established for environmental baseline determination. Pending the outcome of WDEQ-Air Quality Division (AQD) permitting, the existing monitoring locations as well as $PM_{2.5}$ particulate monitors may or may not be needed. At a minimum, Air Monitor 2 would need to be relocated as it falls within the current open pit footprint.

Groundwater

Groundwater monitoring to establish baseline hydrologic and water quality conditions both upgradient and downgradient of the proposed mines and Ore Processing Facility has been completed with a continuous record of at least 1 year. In addition, some ground water monitoring wells and the McIntosh Pit have been sampled continuously on an annual basis since 1988.

Surface Water

Surface water has been continuously monitored for a minimum of 1 year along the nearest potential receiving surface water body, Crooks Creek, at three locations as shown on Map 2.3-3 to establish background conditions upgradient of the Project (CC-MU), immediately adjacent to the Project (CC-US), and downgradient from the Project (CC-DS). In addition, three ephemeral impoundments (SW-1 through SW-3) are sampled on an opportunistic basis. Limited monitoring of water quality within the existing pond at the southern Project perimeter (i.e., Fish Pond or Western Nuclear Pond) has also been performed.

Erosional stability would be monitored under the SWPPP (Map 2.3-4). The SWPPP would be updated as needed when site conditions related to new mine disturbance or mine reclamation change. The SWPPP calls for routine inspection and spot inspection following significant precipitation or runoff events.

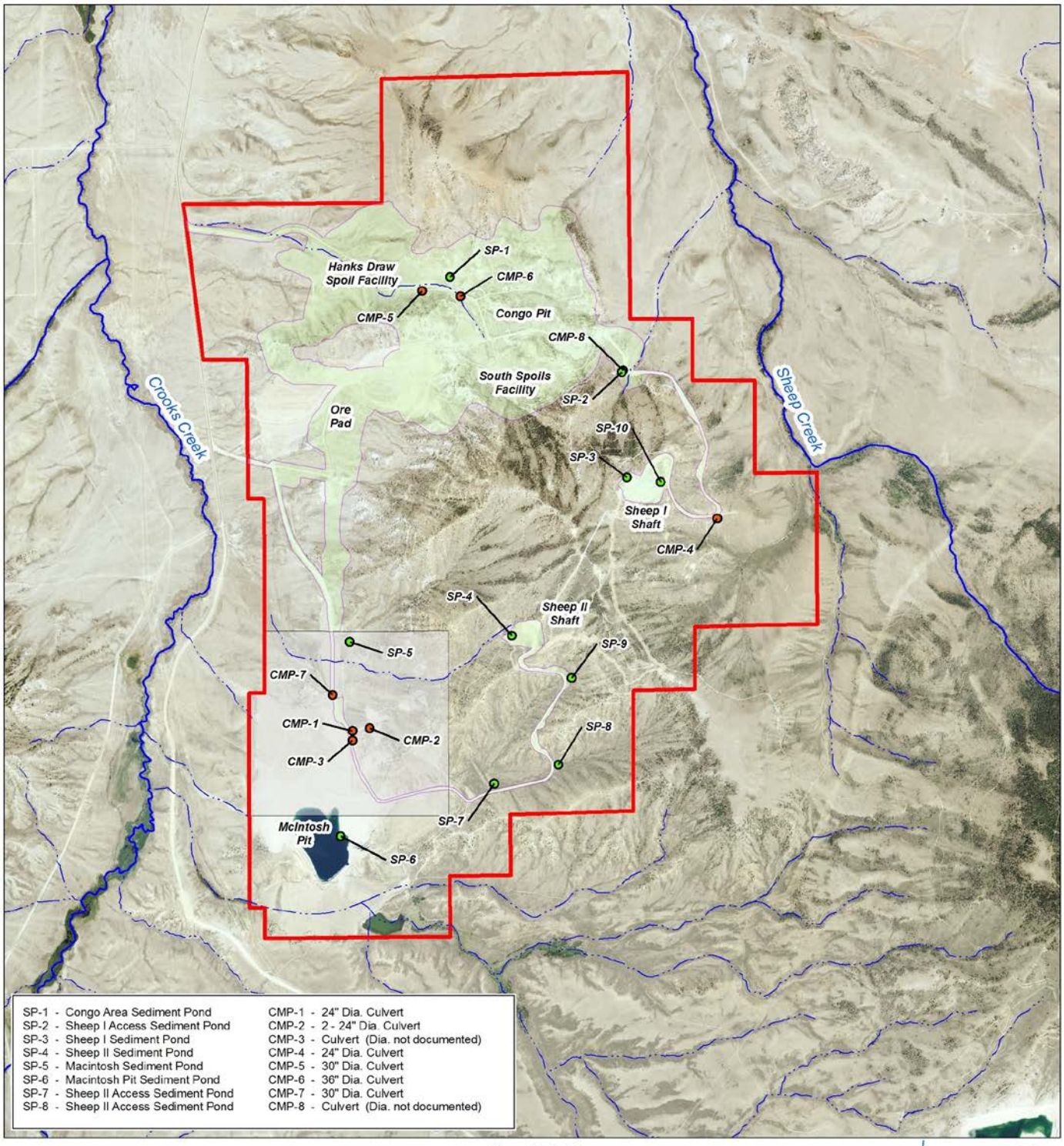
Any discharge of water from dewatering operations would be monitored in accordance with the requirements of the WYPDES permit.

Vegetation

Vegetation diversity and productivity have been quantified as part of the baseline data collection. In 2010, BKS Environmental Associates, Inc. (BKS) of Gillette, Wyoming, reviewed the previous 1980 vegetation surveys, and completed additional vegetation surveys for the Project.

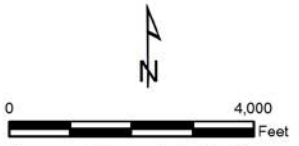
Wildlife

Wildlife surveys have been completed for the Project in consultation with the BLM, the WGFD, and the FWS. The results of the wildlife surveys are referenced under Part 8.9 of the Plan of Operations (Energy Fuels, 2013a).



Map 2.3-4
SWPPP Monitoring Locations

Sheep Mountain Project Area
Maximum Extent of Proposed Disturbance
Proposed NRC License Area



No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM

2.3.12.3 Environmental Monitoring Programs

In some cases, environmental monitoring is the continuation of baseline data collection; however, the frequency may change according to permit and/or license conditions. A summary of the site environmental monitoring program is provided in Table 1 in Appendix 2-B and includes groundwater, surface water, air, noise, soil, vegetation, and wildlife monitoring.

Groundwater

Groundwater monitoring would be conducted throughout the life cycle of the Project according to the NRC approved license and the WDEQ-LQD Permit to Mine 381C. Based on a Non-Significant Revision (NSR) to the existing Permit to Mine 381C (approved in June 2013), groundwater monitoring would be conducted on a quarterly basis for water levels, and on an annual basis for water quality, including both WDEQ-LQD and NRC water quality parameters. Additional sampling would be conducted as appropriate should a spill or excursion be detected.

Surface Water

Surface water would be monitored during operations on a quarterly basis and includes both WDEQ and NRC water quality parameters in addition to water flow measurements. Additional sampling would be conducted as appropriate should a spill or excursion be detected.

Air

To ensure compliance with 10 CFR 20.1301, 20.1302, and 20.1501, air monitoring would be conducted on a continuous basis. Additional mobile measurements would be taken as required within the work place.

Mine related air quality monitoring and measurements would be required for underground working levels to protect worker's health and safety as required by MSHA and the Wyoming State Mine Inspector's Office. EPA would require monitoring of radon gas from mine vents as per 40 CFR Part 61, subpart B; however, the extent and frequency has not yet been established.

Noise

The National Institute for Occupational Safety and Health (NIOSH) recommends an exposure limit for workplace noise of 85 decibels (dBA) for a duration of 8 hours per day (NIOSH, 1998). Exposures at and above this level are considered detrimental to hearing. MSHA regulations further require routine worker screening for hearing loss. Occupational noise levels would be monitored per MSHA and/or NIOSH regulations. Environmental noise would be estimated based on distance from the source and confirmed with spot measurements for initial operating conditions and updated annually.

Soil

Energy Fuels would monitor soils for radionuclide uptake as required by NRC regulations on an annual basis.

Vegetation

Energy Fuels would monitor vegetation for radionuclide uptake as required by NRC regulations on an annual basis. WDEQ regulations require monitoring of areas that have been revegetated for cover, diversity, and productivity. Revegetated areas would be compared to pre-established reference areas to measure the success of revegetation and to ensure the reclaimed lands have been returned to pre-mine land use.

Wildlife

Energy Fuels would continue wildlife surveys prior to and during mine operations with a focus on species of concern and wildlife mortality.

2.3.12.4 Operational Monitoring Programs

Operational monitoring includes Stability/SWPPP monitoring, early detection monitoring, and personnel and workplace monitoring (see Table 2 in Appendix 2-B). Additional operational monitoring requirements would be based on the license and permit conditions of the NRC and WDEQ.

Stability/SWPPP Monitoring

Site stability and erosion would be monitored under the SWPPP (see Map 2.3-4). The SWPPP would be updated as needed when site conditions related to new mine disturbance or mine reclamation change. The SWPPP calls for routine inspection and spot inspection following significant precipitation or runoff events. Monitoring would be conducted to evaluate slope stability and development of any subsidence features. Slope stability monitoring in the Congo Pit and Hanks Draw Spoils Facility would include visual inspection for features such as tension cracks, bulges, and survey of control points by electronic distance measuring equipment or similar devices. Subsidence monitoring would be conducted during mining of the Congo Pit, as well as during underground mining. Because the Congo Pit overlies older mine workings, a ground control crew would be on site during excavation to review historic maps, conduct seismic testing, as well as visual inspection. At the Sheep Mountain Mine, monitoring for surface subsidence would be conducted during monthly inspections of the areas being mined and daily inspections of access roads when the roads were being undermined.

Early Detection Monitoring

Early detection operational monitoring is focused on mineral processing operations and includes:

- Routine measurement of solution flows in relationship to the anticipated water balance.
- Routine inspection of the Heap Leach Pad and plant site.
- Continuous monitoring of leak detection systems.

Flow of solutions throughout the system would be measured and recorded using an automated system. Anomalous flow conditions in the system would be immediately investigated to determine the cause and if there is need for corrective action.

Routine inspection of the plant and heap site would include general observation of all work areas with respect to general housekeeping and to insure that instrumentation is functioning properly. Inspections would include visual inspections of the perimeter of the plant, ponds and heap and inspection of the leak detection systems. Inspection logs would be kept and included in internal weekly, monthly and annual inspection reports.

Leak detection systems would monitor the Heap Leach Pad and ponds. Any flow within the leak detection system would be directed by gravity flow to individual sumps with automatic level alarms and pump back systems.

Personnel and Workplace Monitoring

Monitoring of personnel and the workplace is required in the mines (surface and underground), the Ore Processing Facility, and in the office and maintenance facilities with respect to potential occupational exposures. The nature, extent, and frequency of personnel and workplace monitoring varies based on the potential exposure pathways and risks. Occupational exposure to chemicals and solvents is regulated. Material Safety Data Sheets (MSDS) are required for chemicals in use or stored on site.

Within the NRC Restricted Area, personnel and visitors are required to complete radiological scans prior to exiting the facility. Work areas within the NRC Restricted Area would be monitored, either through fixed instrumentation or routine testing, as determined by the license conditions. Personnel working in radiation protection areas would be equipped with individual monitors and/or badge and would be required to participate in a routine bioassay program to further monitor exposure to radionuclides.

Work areas subject to dusty conditions or chemical fumes, would be monitored through fixed instrumentation and/or routine testing as required. Engineering controls would be used in such areas to minimize exposures to the extent practicable. If the levels cannot be reduced sufficiently through engineering controls to meet regulatory requirements, then PPE would be required of persons entering or working in these areas.

Mine facilities would be constructed and operated with respect to health and safety under MSHA. This includes requirements for implementation of a site specific safety plan which includes task training, a material handling plan including MSDS for all materials, and monitoring and testing of various environmental factors in the work place including but not limited to noise, air quality, dust, and radon gas. All training and monitoring would be documented and demonstrate compliance with appropriate standards.

The On-Site Ore Processing Facility would require a monitoring plan as part of the NRC Source Materials License for Operations. Rigid quality control and assurance programs would be required as license conditions relating to environmental controls, worker health and safety, and potential off-site exposures for any environmental pathway.

Corrective Action

If operational monitoring detects conditions in excess of expected or permitted levels, considering background conditions and variability, state and federal regulations require timely reporting on the nature and location of the event. Although the specific response would be dependent upon of the nature and location of monitoring results, the general approach following discovery would be:

- Determine if emergency response and/or immediate action is required.
- Take appropriate initial action to secure the location of impact from public access, isolate the area of impact from the environment and stop the excursion at its source if possible.
- Assess the excursion with respect to public safety and the environment.
- Notify the appropriate regulatory agencies within required timeframes.
- Sample, clean-up and dispose of associated wastes as appropriate.
- Restore the site.
- Follow up with site personnel and regulatory authorities to assess the event and measures to prevent reoccurrences of a similar nature.

2.3.12.5 Monitoring of Reclamation and Decommissioning

Monitoring during reclamation of the Project Area outside of the On-Site Ore Processing Facility includes continued health and safety monitoring and environmental monitoring to help ensure the reestablishment of a stable system (Section 2.3.5). With respect to removal and closure of the mine facilities, the WDEQ-LQD Permit to Mine 381C application revision includes requirements for monitoring the material being disposed of or left in place to ensure it is appropriately handled. This includes regraded spoil sampling to ensure materials that could adversely impact soil quality and revegetation success are not within or adjacent to the root zone. It also includes sampling of sediment from ponds to determine if the material must be disposed of with other material unsuitable for near-surface disposal (Section 2.3.5.3). With respect to surface disturbance, the WDEQ-LQD Permit to Mine 381C application revision includes requirements for post-mine topography, drainage reestablishment (including surface water flow and quality), and evaluation of revegetation success. With respect to groundwater, the application revision includes requirements for monitoring to evaluate recharge rates and water quality stability relative to projected post-mine conditions. As noted in Section 2.3.5.11, when the reclamation is considered complete by WDEQ-LQD, the reclamation bond is released and jurisdiction terminated.

The monitoring during decommissioning of the On-Site Ore Processing Facility would focus on continued health and safety monitoring and removal of 11(e)(2) byproduct material from areas outside the Heap Leach Pad and stabilization of the Heap Leach Pad for long-term care and monitoring (Section 2.3.5.5). As noted in Section 2.3.5.12, a plan for these long-term activities would be developed prior to transfer of the facility to the designated agency.

2.4 BLM MITIGATION ALTERNATIVE

This alternative was developed in response to public and agency inputs collected during the scoping process in order to potentially reduce the environmental impacts of the Project. This alternative is similar to the Proposed Action Alternative, in that conventional mining techniques would be utilized and uranium would be produced using heap leach and solvent extraction/ion exchange procedures. This alternative would utilize the same processes and take place over

the same time period as the Proposed Action but with the below described changes and mitigation procedures implemented to reduce and/or otherwise offset surface disturbance and potentially limit impacts to human health, safety, and the environment. Because of the unique aspects of the Mining Laws and 43 CFR 3809 regulations, the BLM's decision making authority is limited in requiring certain mitigation measures. It is important to emphasize that the Record of Decision would determine if and to what extent the BLM Mitigation Alternative would be implemented to prevent unnecessary and undue degradation of public lands. Therefore, the mitigation measures presented in Table 2.4-1 are for analysis purposes only.

Changes to the Proposed Action and additional mitigation measures under this alternative would include: revisions to Energy Fuel's proposed reclamation plan and requiring an inventory of existing roads and development of a Travel Management Plan. Table 2.4-1 provides a summary of the both the applicant-committed mitigation measures under the Proposed Action and the BLM proposed additional mitigation measures under the BLM Mitigation Alternative.

2.4.1 Reclamation Plan Revisions

The Proposed Action describes reclaiming lands to the previous land use of grazing and wildlife habitat. Under this alternative, reclamation success would be further defined using the site characteristics based on the Ecological Site Descriptions (ESD) that have been identified for this area in accordance with the Appendix B of the Lander ROD and approved RMP (BLM, 2014a). In addition, Energy Fuels would be required to comply with a more stringent Noxious Weed Plan than described in the Mine Permit Revision that identifies the frequency of inspection for noxious weeds and herbicide spraying by a certified applicator in accordance with the Mitigation Measures presented in Table 2.4-1 under Invasive, Non-native Species. Another aspect of this alternative that would require revisions to the reclamation plan would require that Energy Fuels evaluate reclamation success of previously disturbed areas within the Project Area that have not achieved adequate revegetation and reclaim those areas in order to offset the amount of disturbance of public lands around the processing facility that might be permanently removed from the public domain and transferred to the DOE.

Under this alternative, the proposed reclamation plan would be revised to meet the Standards described in Appendix B of the Lander ROD and approved RMP (BLM, 2014a). In general, Energy Fuels would be required to develop site-specific reclamation plans dependent upon ecological sites and/or reference areas, reclamation potential, and area resource objectives. Additional site specific measures would be required for those areas with Limited Reclamation Potential (LRP) soils. The Reclamation and Noxious Weed Plans would include specific measures to meet these standards and incorporate the Wyoming Reclamation Policy guidelines as well. Changes required of the reclamation plan to meet these objectives are described as Mitigation Measures in Table 2.4-1 under Vegetation and Soils.

For existing disturbances, reclamation success of previously disturbed ground within the Project Area is highly variable. Some of the unreclaimed areas for which Energy Fuels has no reclamation obligation have developed vegetation that would probably meet the reclamation standards. This is, particularly true on some of the drill roads that dissect Sheep Mountain. However, other disturbances have shown limited success, particularly some of the AML work according to the standards. In the cases of the Paydirt Pit and Sun Heald areas, seed and established vegetation includes mostly grasses and some forb species but with little or no native shrub species. To be fully successful, the plant communities must include all identified growth forms in the ESD to meet vegetation diversity. In addition, these sites would need to meet the site characteristics for soil health as defined in the ESD reference sheets.

Table 2.4-1
Summary of Applicant Committed Measures and Mitigation Measures

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
Climate and Air Quality	Water would be sprayed on the underground ore conveyor transfer and on surface and underground primary crushers. The overland ore conveyor transfer would be completely enclosed. Tanks without airflow on all mixer settlers would be covered. Dust would be collected on the diatomaceous earth bag breaker. The active portion of the heap leach would be wetted with leach solution and covered with coarse gravel. Frequent watering would occur on all unpaved roads. Tier-2 compliant engines would be used on surface mobile and nonroad sources. Tier-2 compliant engines would be used on underground mobile and nonroad sources (with the exception of scooptrams, fuel lube truck, forklift, and mechanical service truck, which are Tier-1).	No new mitigation measures proposed in addition to the applicant committed mitigation measures.
Geologic Resources	No measures are proposed.	No measures are proposed.
Mineral Resources	No measures are proposed.	No measures are proposed.
Soils	Available suitable topsoil would be salvaged. During Construction, topsoil would be salvaged from: the open pit area; ore stockpile area; and the Hanks Draw Spoils Facility and the South Spoils Facility during construction. The topsoil would be placed in stockpiles, which would be signed and protected from wind and water erosion. Topsoil stockpiles would be clearly marked with signage in accordance with LQD regulations. Topsoil stockpiles would be neatly dressed; stabilized with an interim seed mixture approved by WDEQ and BLM; and clearly identified by signage in compliance with WDEQ regulations.	S-1: Stockpile stabilization (i.e., surface roughing, seeding, and mulching) would be implemented to minimize the loss of topsoil due to wind and water erosion over the life of the mine. In addition, a perimeter ditch/berm would be constructed around the stockpile for sediment control. S-2: A suitable vegetative cover would be established on the topsoil stockpiles for stabilization purposes to promote beneficial soil biological activity, aid in maintaining long-term soil productivity, and minimize weeds. S-3: Soil amendments might become necessary depending upon reclamation

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	Topsoil stripping would be conducted in a phased manner as the pit and spoils facilities expand. Temporary and permanent erosion controls consisting of silt fence, sediment control wattles, berms, ditches, sediment and collection ponds, and culverts would be installed throughout the disturbed areas, as necessary, to minimize erosion and capture sediment. The surface disturbances associated with the Proposed Action would be regraded to approximate original contours. Spoil suitability would be tested and amended as necessary, topsoil replaced, and the site revegetated.	success. Examples of soil amendments consist of: grass hay, wood chips, or other weed-free cellulosic materials, gypsum, elemental sulfur, and fertilizer. Soil amendment plans would need to be submitted for approval prior to the application of any soil amendment.
Surface Water and Groundwater	For mining-related impacts: The Project has a SWPPP. This plan would be updated as necessary. Surface water flow would be diverted from the Congo Pit through a series of diversion channels and collection ponds designed for the site conditions. Surface water diversions, sediment ponds, and culverts would be used to control surface water runoff from the site and minimize erosion. These features would be designed for the site conditions. All drainage that could flow off-site would meet the requirements of the WYPDES stormwater permit, including appropriate sediment control measures. Dewatering systems would be designed to address maximize mining efficiency while minimizing drawdowns. For discharge of water from dewatering of the	SW-1: Any water discharged on-site under the Wyoming Pollutant Discharge Elimination System (WYPDES) would require consultation and approval by the BLM regardless of where the discharge point is located.

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	Congo Pit and Sheep Underground Mine, a treatment system would be constructed in accordance with the requirements of a WYPDES permit. The discharge location would be selected to minimize the potential for erosion. Fuel and lubricant storage areas would be enclosed with berms capable of containing any spill from storage tanks within the bermed area plus adequate freeboard. Storage tanks for fuels and other liquids would comply with Chapter 17 of WDEQ-WQD's rules and regulations on storage tanks. Berms would be placed in and around facilities to control the movement of spills. Energy Fuels would select appropriate materials for pipelines and tanks, implement proper installation and testing of those materials prior to use, and inspect and maintain pipelines and tanks. Inspections would occur regularly, and should a spill or leak occur, remediation and reporting procedures would be conducted in accordance with the spill contingency plans. A 500 foot buffer along the eastern edge of Crooks Creek would be established within which there would be no surface disturbance related to the Project. In addition to the above measures, the following would be specific to the On-Site Ore Processing Facility: Design features and operational requirements for the On-site Ore Processing Facility would comply	

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	with NRC requirements to minimize spoils and leaks. For example, the Heap Leach Pad would be lined with a synthetic triple liner system with dual leak detection. Leak detection sumps would be placed at low points between the primary and secondary liner, as well as between the secondary and tertiary liners. The sumps would be equipped with standpipes, which would be used to access the sump for monitoring purposes and to pump out any collected solution. There would be no discharge to the surface from the On-site Ore Processing Facility. All stormwater would be captured on-site for treatment and disposal.	
Water Use	Existing water rights have been identified, and potential impacts evaluated. Energy Fuels would obtain additional water rights, if necessary, for the dewatering.	No measures are proposed.
Invasive, Non-Native Species and Noxious Weeds	Prevention and control of noxious and invasive weeds during construction, operations, and reclamation would be performed using an integral approach, which includes the following management practices: Seeding and revegetating areas of disturbance as soon as practical with certified weed-free seed; Minimizing soil disturbance to the extent possible; Using weed-free mulch/straw for erosion control; and Selecting and spraying herbicides based on weed species and desired results. Only BLM-	INNS-1: Energy Fuels would be responsible for managing all noxious and undesirable invading plant species in the reclaimed areas, including cheatgrass, until revegetation activities have been determined to be successful. If noxious or invasive weeds are encountered, the BLM would be consulted for suppression and control methods. A Pesticide Use Proposal (PUP) and written approval from the BLM AO for the use of herbicides would be obtained prior to usage of herbicides. Pesticide Application Records (PAR) would also be submitted to the BLM AO on a regular basis. An annual Pesticide Use Report (PUR) would be required at the end of each season. INNS-2: Prior to any surface disturbing activities, an invasive plant survey would be

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	approved herbicides would be used.	conducted by a qualified vegetation specialist. This assessment would show the location and species of invasive or noxious plants and the findings would be presented to the BLM. INNS-3: Mobile equipment being transported from an off-site location to the Project Area would be cleaned prior to arrival using water, steam, or air pressurized cleaning methods to remove any invasive or noxious weed seed and plant parts or materials that could contain seeds. When appropriate, sites off public lands where equipment could be cleaned would be identified. Seeds and plant parts would be collected and disposed of appropriately. INNS-4: Energy Fuels would be responsible for suppression and/or control of any invasive or noxious plant species within the Project Area. If chemical herbicide control methods are used on public lands, only BLM-approved chemicals and application rates and methods would be allowed. INNS-5: All mulch, seed, and other vegetative reclamation materials would be certified weed-free. All sand, gravel, and fill materials would be certified weed free. INNS-6: Annual weed surveys would be conducted during each growing season for the life of the Project. Reconnaissance surveys would be conducted within areas that were recently disturbed by project-related actions during the previous year(s). Survey areas would include 50-foot buffers extending from surface disturbances to adjacent, undisturbed surfaces. Complete surveys of an area plus buffer would be preferred but sampling surveys

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		of an area plus buffer might be required if the disturbed area is large. Weed species, number of plants, and/or area occupied by each weed infestation observed would be reported immediately so that infested areas would be cleared in a manner to minimize transport of weed seed, roots, and rhizomes or other vegetative materials and soil from the site to adjacent weed-free areas.
Vegetation	Fall seeding would be done between September 15 and the time that frost prevents preparation of a proper seed bed. Spring seeding would be done after the frost leaves the ground and until May 15th.	VEG-1: Genetically appropriate and locally adapted native plant materials (e.g. locally sourced or cultivars recommended for seed zone) would be selected based on the site characteristics, ecological setting, and pre-disturbance plant community. VEG-2: Locally sourced and/or collected seeds would be used to the extent possible (local collection and logistics should be included in the revised Reclamation Plan). VEG-3: Non-native plants would only be used as an approved short term and non-persistent (i.e. sterile) alternative to native plant materials. VEG-4: Energy Fuels would provide data to the BLM on all source material used for reclamation (e.g. where seeds were obtained, where seed originated, year collected, results of germination and viability tests - these data should accompany seed purchase). VEG-5: Energy Fuels would provide the BLM with small samples of all seed used in reclamation, preferably before different species are mixed together. VEG-6: Seeding would take into account differential handling methods to match

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		germination characteristics of species in the seed mix and consider timing of planting to maximize germination and establishment of all reclamation species.
Wetlands and Riparian Zones	No measures are proposed.	WT-1: Should wetlands be identified through the jurisdictional status process with the U.S. Army Corps of Engineers, BLM would require Energy Fuels to comply with Executive Order 11990.
Wildlife – ESA-Listed, Proposed, and Candidate Species	No measures are proposed.	ESA-1: If surface disturbances to sagebrush habitats are planned during the period when sage-grouse are nesting and/or during the early brood-rearing period (mid-March through June), searches for nesting sage-grouse and/or broods would be conducted prior to initiating surface disturbances. If sage-grouse nests and/or brood are observed, WGFD would be consulted before any surface disturbance occurs. ESA-2: All garbage would be collected and managed on-site appropriately then removed from the Project Area at frequent intervals (at least every two weeks) to avoid attracting scavengers and avian predators to the area. ESA-3: Newly constructed aboveground structures that can serve as perching and nesting sites for corvids and raptors would be equipped with anti-perching devices. Anti-perching devices would also be installed on all existing power line poles and cross-arms on a case by case basis if not already in place. ESA-4: New and existing 3- or 4- strand wire fences would have markers or reflectors to increase visibility for low-flying sage-grouse. ESA-5: All water/fluid impoundments capable

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		of providing a medium for mosquito reproduction would be monitored for mosquito larvae. If mosquito larvae in water/fluid impoundments are present, mosquito control would be initiated immediately. ESA-6: If off-site processing occurs, dust control would be applied to the Crooks Gap/Wamsutter Road in coordination with the appropriate county Transportation Department, at least during the sage-grouse breeding and nesting season. ESA-7: If off-site processing occurs, vehicular speed limits would be reduced to limit noise produced by trucks travelling on the road during the sage-grouse breeding and nesting season. ESA-8: If off-site processing occurs, project-related truck traffic during the sage-grouse nesting/breeding season would only be allowed between 9 am and 6 pm daily to prevent project related noise from detection or exceeding ambient noise at lek perimeters. ESA-9: If off-site processing occurs, baseline measurements of ambient noise at lek perimeters facing the Crooks Gap/Wamsutter Road would be made to determine levels of risk to each active lek within 2 miles of the road. ESA-10: Based on current protocol, lek surveys would be conducted each spring prior to any mining activity to look for undiscovered leks within 4 miles of Project disturbance.
Wildlife – Migratory Birds	Access to the radiation control areas, which may contain toxic and/or radioactive constituents,	MB-1: Surface disturbance in previously undisturbed areas and/or disruptive activities

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	would be controlled by fencing (8 foot chain link) to exclude access to the public, wildlife, or livestock. Ponds would be covered with bird balls to deter waterfowl. Project personnel would inspect the ponds on a daily basis to verify adequate coverage by bird balls, identify, record, and report any wildlife mortalities, and where possible, implement measures to reduce or eliminate future occurrences.	that have the potential to cause destruction of nests, eggs, or young of migratory birds would be prohibited during the period of May 1st to July 15th. A survey of the proposed disturbance areas would be conducted by the proponent to determine the presence/absence of nesting migratory birds. Nest surveys would be conducted no more than 7 days prior to surface disturbing and/or disruptive activities. MB-2: All open pipes would be screened, capped, or filled to prevent birds from becoming trapped; all exhaust stacks would be screened to prevent bird entry and discourage perching, roosting, and nesting. Caps would be checked regularly. MB-3: In consultation with BLM, WGFD, and the USFWS, approaches to minimize bird presence on the Heap Leach Pad and exposure to sulfuric acid and sodium chlorate would be explored. If an approach is identified during the required consultation and is implemented, bird death impacts would be minimized. MB-4: New power lines would be constructed to meet or exceed the 2006 APLIC Standards and bird deterrents should be installed on existing power lines. MB-5: Sides of all water/fluid impoundments, including sediment and collection ponds, would be sloped enough to allow animals to escape.
Wildlife – BLM and Wyoming Special Status Species	No measures are proposed.	BWSS-1: BLM may determine if monitoring limber pines that are not infected with WPBR warrant testing to determine WPBR resistance. If so, BLM would recommend that unaffected trees be protected from natural and human

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		disturbance until the determination is made. If resistant, limber pine cones could be used in re-establishing populations. Alternatively, BLM may determine that transplanting some of the healthy limber pine trees to previously disturbed areas within the Project Area would be effective reclamation in those sites. BWSS-2: To protect breeding raptor species, Energy Fuels would avoid all existing raptor nest sites and surface-disturbing activities during the breeding season (February 1 to July 31 for golden eagles, April 1 to September 15 for burrowing owls, and February 1 to July 31 for all other raptors) within applicable nest protection buffers (i.e., 1 mile for ferruginous hawk and golden eagle or 0.75 mile for all other raptors, unless site-specific, species-specific distances are determined and approved by the BLM). Because a number of variables (e.g., nest location, species' sensitivity, breeding, phenology, topographical shielding) would determine the level of impact to a breeding pair, appropriate protection measures, such as seasonal constraints and establishment of buffer areas, would be implemented at active nest sites on a species-specific and site-specific basis, in coordination with the BLM. This measure would only apply to operations beginning within these sensitive time frames and within the sensitive buffer areas. It would not apply to ongoing operations continuing through the active breeding season.
Wildlife – General	No measures are proposed.	W-1: Speed limits of 35 miles per hour from Jeffrey City to the Project Area would be enforced by Energy Fuels to minimize big game-vehicle collisions. W-2: Human activity on the east slope of

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		Sheep Mountain, at the Sheep I Shaft, would be minimized to the extent practicable as to not compromise the safety of the mine from November 15 to April 30 to reduce impacts to wintering mule deer. W-3: Fences would be monitored for any wildlife mortalities, including big game. W-4: Wildlife friendly fencing would be placed around reclaimed areas to facilitate reclamation success. Fences installed for reclamation purposes would conform to BLM's standard fence type (3-wire, 2 barbed, bottom smooth) to facilitate animal migration. Unnecessary existing fencing would be removed to reduce wildlife hazards. W-5: Dust control would be applied along Crooks Gap/Wamsutter Road in consultation with the appropriate county transportation department to reduce effects to roadside vegetation. W-6: Through consultation between NRC and BLM, the perimeter of the chain-link fence surrounding the NRC Restricted Area would be checked frequently, depending on initial observations, for any signs of mammal or reptile presence. W-7: Through consultation between NRC and BLM, if signs of small mammal and reptile presence are detected within the NRC Restricted Area (animal presence, carcasses, feces, burrows), a fine mesh wire fence or hardware cloth apron extending 2 feet below the ground surface would be buried around the outside perimeter of the chain-link fence to

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		minimize or eliminate burrowing animals from entering the area. Fine mesh fencing extending to 3 feet above ground around the inside perimeter of the chain-link fence would be placed to prevent smaller, ground-dwelling wildlife (i.e., ground squirrels, chipmunks, and other rodents, lizards, and snakes) from entering tailings cells and evaporation ponds. W-8: Sides of all water/fluid impoundments, including sediment and collection ponds, would be sloped enough to allow animals to escape.
Wild Horses and Burrows	No measures are proposed.	WHB-1: The Congo Pit highwalls would be fenced to more effectively decrease potential falls, entrapments, or other impacts.
Cultural Resources	Energy Fuels proposes to install signage along Big Eagle Road or Crooks Gap Road adjacent to the Project Area during construction of the Ore Processing Facility that provides a historical overview of uranium mining in the Crooks Gap area.	CR-1: To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, Energy Fuels and their contractors, and all construction personnel, would attend mandatory training and be educated on the significance of cultural resources and the relevant federal regulations intended to protect them. CR-2: In accordance with 43 CFR 3809.420 Performance Standards, if unknown cultural resources are found during project activities, Energy Fuels would suspend all activities that further disturb such materials and immediately contact the BLM AO. Project activities would not resume until authorization to proceed is issued by the BLM AO. Energy Fuels would be responsible for the costs of evaluation and any necessary mitigation. CR-3: To prevent impacts through physical avoidance and protection during construction, Site 48FR7357 would be isolated with temporary construction fencing, under the on-

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
		site guidance of a BLM-approved archaeologist.
Paleontological Resources	No measures are proposed.	P-1: In accordance with 43 CFR 3809.420 Performance Standards, if suspected fossil materials are uncovered during construction, Energy Fuels would suspend all activities in the vicinity of such a discovery and notify the BLM AO as soon as possible. Work in this area would not continue until notified to proceed by the BLM AO. The BLM AO would evaluate, or would have evaluated, such discoveries not later than 5 working days after being notified, and would determine what action shall be taken with respect to such discoveries. The decision as to the appropriate measures to mitigate adverse effects to significant paleontological resources would be made by the BLM AO after consulting with Energy Fuels. Energy Fuels would be responsible for the cost of any investigations necessary for the evaluation, and for any mitigative measures.
Tribal and Native American Religious Concerns	No measures are proposed.	TNA-1: In the event that properties of traditional religious and cultural significance to Indian tribes were discovered during Project activities, Energy Fuels would stop working in that area and notify the BLM AO. Work would continue in that area with approval of the BLM. Energy Fuels would be responsible for the costs of evaluation, tribal consultation, and any necessary mitigation.
Socioeconomic	The Project's staggered development schedule over 5 years would limit annual population increases in Fremont and Carbon counties and allow local communities to adjust to potential population changes.	No measures are proposed.
Environmental Justice	No measures are proposed.	No measures are proposed.
Transportation/Access	On-site haul roads would be crowned and ditched to quickly shed any direct precipitation, and culverts would be installed to convey runoff	TRA-1: An inventory would be conducted to evaluate the condition of all roads that provide access to the Project Area and all existing

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	from first and second order drainages that are crossed by the haul road. Berms reaching the midpoint of the wheel of the largest equipment on site would be installed in any area where the potential for equipment tipping exists. Off-road water trucks would provide dust control and water to aid in compaction of the surface. Haulage routes within the spoils pile areas would be routinely graded and sprayed with water to control fugitive dust. Energy Fuels would coordinate with the Wyoming Department of Transportation (WYDOT), Fremont County, and in the event of off-site processing, Sweetwater County and the BLM so that use of state highways and county and BLM roads is consistent with issued use permits, rights-of-ways, and other state and county requirements.	roads within the Project Area. TRA-2: Roads identified during the inventory as benefiting wildlife, grazing, wild horses, vegetation, or other resources would either be maintained or left in an as-is condition. TRA-3: Project Area roads identified during the inventory without adequate reclamation success would be abandoned and reclaimed to appropriate standards. TRA-4: Successfully revegetated inventoried roads within the Project Area and roads on which reclamation would cause adverse effects would be left in an as-is condition. TRA-5: Roads inventoried under TRA-1 and determined to be maintained or left as is under TRA-2, would be managed with post-reclamation traffic in mind.
Radiological Exposure	Workers would be protected through MSHA regulations, as well as the Wyoming State Mine Inspector's Office, which establishes maximum exposure levels of radon and radon-daughter products. For the Heap Leach Pad, under NRC regulations (10 CFR 20), workers would be limited to an annual radiation exposure limit of 5,000 mrem/year. USDOT regulations require that the ore trucks be tarped and checked for radiation levels prior to leaving the mine site and the ore processing site on the return leg. In the event of an accident resulting in an ore spill, the spilled material and surrounding area would be cleaned up to	No measures are proposed.

Resource	Applicant Committed Mitigation Measures	BLM Proposed Mitigation Measures
	background levels. Cleanup levels would be verified using a gamma meter or similar instrument. Energy Fuels' company policies require that all scrap metal and other recyclables be checked with an appropriate meter prior to leaving the mine site. If radiation levels were found to be elevated, the material would be cleaned using a power wash or other methods to meet appropriate radiation standards.	
Hazardous Materials and Waste	Spilled fuel, used oil, used antifreeze, and other liquid wastes from maintenance operations would be recycled and/or disposed off-site at a licensed facility. All hazardous waste would be disposed of or recycled in accordance with state regulations and, in some cases, landfill-specific requirements. Non-hazardous materials would be recycled or disposed of off-site at a licensed facility. Spill response measures are outlined in the Spill Contingency Plan	No measures are proposed.
Recreation	No measures are proposed.	REC-1: Abandoned roads which currently access hazardous areas of the mine and pose safety hazards for hunters shall be reclaimed and/or blocked off during operations reducing safety risks to hunters.
Livestock Grazing	No measures are proposed.	See WHB-1 and W-4.

Because much of the Sheep Mountain Project Area has been previously disturbed and/or reclaimed to various reclamation standards, the potential for adequate successful revegetation might prove difficult. Fencing, soil amendments, fertilizers, and additional seeding may be required in order to achieve reclamation success over time.

In order to aid in the overall reclamation success and establish desired self-perpetuating native plant communities throughout the Project Area, Energy Fuels would fully evaluate and monitor the reclamation success by conducting inventories. Reclamation plans would be designed to enhance previously disturbed lands so as to meet the reclamation standards for both final and interim reclamation depending on the use of this area. This would mostly include reseeding with native site adaptive species, incorporation of erosion protection, and soil amendment.

In addition, the Plan of Operations would need to be revised to include stabilization of topsoil piles which could be held on site for long periods of time. In order to ensure reclamation success, it is essential to protect these piles from accelerated erosion and to keep the topsoil viable. Additional methods to reduce erosion and maintain the viability of these piles would require implementation of items such as requiring installation and maintenance of erosion control blankets, hydromulching, seeding cover crops, and incorporation of organic matter. Mitigation Measures meant to maintain viability of topsoil piles are presented in Table 2.4-1.

On LRP soils, additional measures would be incorporated based on the limiting characteristics of the soils. Soils on steep slopes with high salt content or shallow to a root barrier limits the reestablishment of plants while reducing the viability of the soils. Therefore, it is essential to provide additional measures to ensure reclamation success. This includes but is not limited to use of erosion blankets, hydromulching, cover crops, special seed mixes, and soil amendments.

The BLM would require the evaluation and monitoring of implemented reclamation methods using the reclamation criteria established in Appendix B of the Lander ROD and approved RMP (BLM, 2014a).

Throughout the mine life, required monitoring of interim reclamation on spoils facilities and portions of the Congo Pit would be evaluated to determine the most appropriate use of amendments or modifications to enhance reclamation success in other interim reclamation and final reclamation annually.

2.4.2 Travel Management Plan

Under this alternative, Energy Fuels would develop a Travel Management Plan to better manage and control access to the Project Area throughout the life of the Project and consider post reclamation/site closure travel. The first step in developing this plan would be to evaluate and inventory the conditions of all of the roads within the Project Area and that provide access to the Project Area including old drill roads. Roads that act as an obvious benefit to wildlife, vegetation, or other resources would be maintained and/or left-alone, and roads without adequate reclamation success or pose obvious threats to human health, safety, or the environment would be abandoned and reclaimed to appropriate standards. Roads that have been successfully revegetated or where attempting reclamation would cause adverse effects would be left-alone and not reclaimed further.

Hunters and recreational off-road vehicle users routinely drive within the Project Area currently, especially during hunting season. Planning and developing access roads and viewpoints for hunters/recreationalists as part of the site reclamation plan would provide recreational opportunities while avoiding hazards present on the site. Reclaiming abandoned roads that access the hazardous portions of the mine site and pose safety hazards for hunters and recreationalists would promote human health and safety and decrease environmental impacts.

2.5 NO ACTION ALTERNATIVE

Under this Alternative, BLM would deny Energy Fuels' Plan of Operations as proposed. Therefore, the BLM would be denying the proponent's right to extract minerals on federal lands from their mining claims. The selection of the No Action Alternative may constitute a taking because it violates valid existing rights under the U.S. Mining laws and may result in legal action by the proponent. For these reasons the selection of the No Action Alternative is unlikely, but is described in this document in order to satisfy the requirements under NEPA.

The proposed Project is entirely within an active mine permit, WDEQ-LQD Permit to Mine 381C. Energy Fuels is obligated to complete certain reclamation efforts under the existing WDEQ-LQD Permit to Mine 381C that would occur under any alternative including the No Action Alternative (see Map 2.5-1).

Existing infrastructure within the WDEQ-LQD Permit to Mine 381C mine permit area includes approximately 6.5 miles of roads connecting all previously constructed components of the Project, an overhead power line, a temporary surface water line, and ancillary buildings (office, dry room, and storage). Partially under an existing right-of-way and partially under a new temporary right-of-way from the BLM, Energy Fuels constructed an 8-inch diameter, HDPE temporary surface dewatering pipeline from the Sheep I Shaft to the McIntosh Pit, passing by the Sheep II Shaft. The 34.5/19.9 kilovolt (kV) overhead power line was installed during the fall of 2011 along an existing right-of-way and supplies power to run the dewatering pumps.

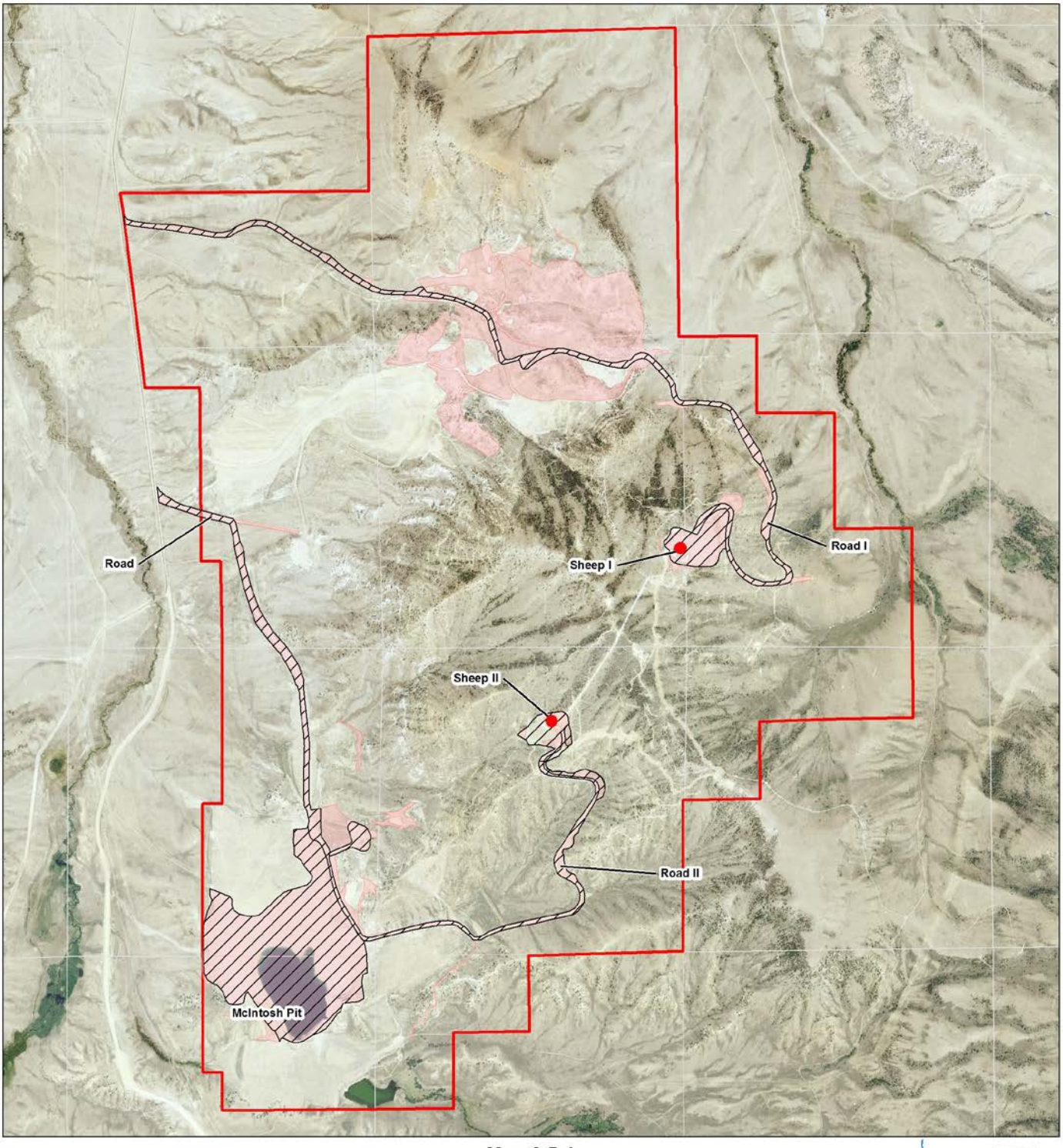
Map 2.5-2 shows the areas that have been reclaimed to date by both AML and others (including USECC, Western Nuclear, Titan, and Energy Fuels). Of the total 891.7 acres of reclaimed disturbance, 215.9 acres were reclaimed by AML and 675.8 acres were reclaimed by others. Approximately 419.6 acres are currently disturbed. Of this, 227.0 acres are currently bonded for reclamation under WDEQ-LQD Permit to Mine 381C, 189.9 acres were disturbed prior to existing laws for which Energy Fuels has no reclamation obligation, and 2.7 acres are proposed for reclamation by AML. The current mine reclamation commitments that would occur under the No Action Alternative include:

Sheep Declines. The Big Sheep and Little Sheep unfinished declines would be sealed, and the Sheep Declines Shops would be removed. Spoil facilities would be removed and the area around the declines would be regraded and seeded. The declines would be sealed by installing a permanent concrete bulkhead backfilled to the surface.

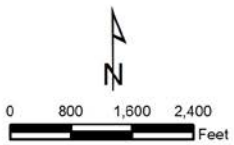
Access roads. The main road to the Sheep Declines Shop and McIntosh Pit up to the Sheep II Shaft would be reclaimed. Additionally, the Hank's Draw Road up to the Sheep I Shaft would be reclaimed.

Sheep I and II Shafts. Energy Fuels has placed a permanent surface cap over both the Sheep I and Sheep II shafts that allows for monitoring, ventilation, and dewatering. The Sheep II Shaft area has been reclaimed to the standards consistent for mining, but additional work would be done under the No Action Alternative (final regrading and seeding). Sheep I spoils would be removed and the site reclaimed.

The McIntosh Pit and Shops. In 2011, the mine shops were demolished, all material removed, and the solid waste facility was excavated and removed. Sellable scrap metal was salvaged and all other solid waste was properly disposed of off-site at the Fremont County facility.

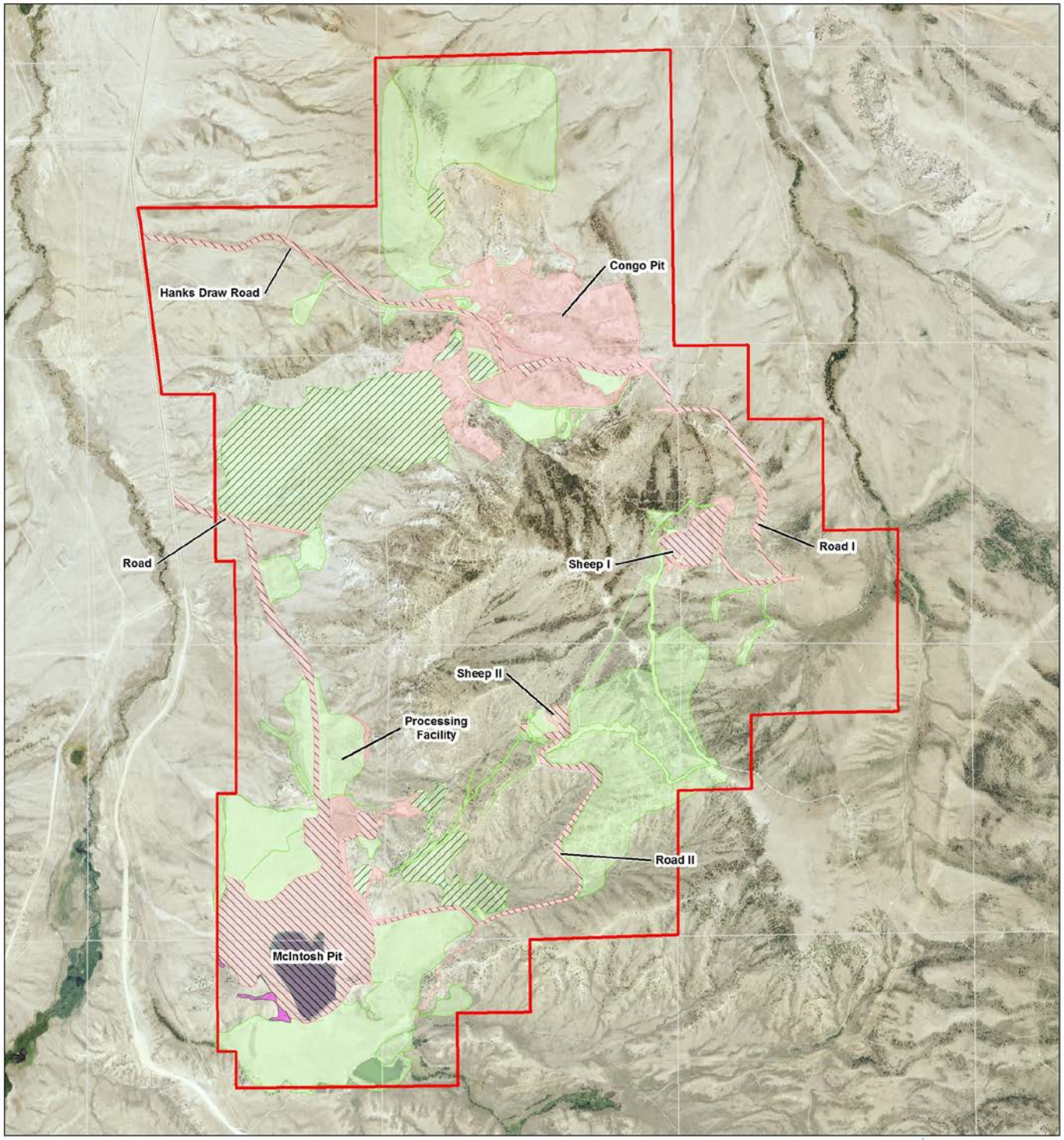


Map 2.5-1
No Action Alternative



Sheep Mountain Project Area
Disturbance Bonded for Reclaimation (249.1 acres)
Existing Disturbance (419.65 acres)

No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM



Map 2.5-2
Current Reclamation Status

N

0 1,000 2,000 3,000 Feet

No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by the BLM

- Sheep Mountain Project Area
- Existing Disturbance - Not Bonded (189.9 acres)
- Existing Disturbance - Bonded for Reclamation (227.0 acres)
- Existing Disturbance - AML Reclamation (2.7 acres)
- Reclaimed Disturbance - by Others (675.8 acres)
- Reclaimed Disturbance - by AML (215.9 acres)

The reclamation plan under WDEQ-LQD Permit to Mine 381C requires Energy Fuels to reduce half of the current highwall (northern and western sides) of the McIntosh Pit for access and allows the remaining highwalls and groundwater impoundment to remain as a reclamation reservoir. A portion of the north highwall was partially backfilled in 2011 as part of the removal of mine spoils from the Sheep II Shaft area. The remaining highwall reduction obligation would be met by backfill during construction of the Heap Leach Pad. WDEQ-AML proposes to reclaim the remaining features of the McIntosh Pit beginning in 2014. Reclamation of the McIntosh Pit is described in Chapter 5.

2.6 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

2.6.1 Mining Alternative (In-Situ Recovery)

In-situ leaching (ISL), also known as in-situ recovery (ISR), consists of injecting a leaching solution into porous uranium-bearing strata through a series of injection wells. Once in contact with the mineralization, the leach solution or lixiviant oxidizes the uranium minerals, which allows the uranium to dissolve in the groundwater. Production wells, located between the injection wells, intercept the uranium-bearing lixiviant and pump it to the surface. At the surface, a centralized ion-exchange facility extracts the uranium from the lixiviant. Once the ion-exchange resin is fully loaded with uranium, it is stripped or eluted. The uranium is then precipitated from the eluate as yellowcake slurry, dried, and packaged.

Although a sulfuric acid solution is allowed and used as the lixiviant in some countries, ISR operations in the United States typically add dissolved oxygen and carbon dioxide to the native groundwater to produce a weak alkaline lixiviant. This results in less environmental impact to the groundwater. Testing of the ores at Sheep Mountain indicate that uranium recovery would be very limited through use of a weak alkaline lixiviant in comparison to a sulfuric acid heap leach. ISR systems are considerably less expensive to install and operate than a conventional mining and ore processing operation.

ISR is currently the most common form of uranium recovery in the United States; however, it is dependent on amenable mineralogical and hydrological conditions. The Sheep Mountain ores are mineralogically and geochemically amenable to ISR methods; however, the hydrologic conditions are not, and this renders ISR processes impractical.

Much of the uranium in the sandstone beds in the Battle Spring Formation is above the water table or in an unconfined aquifer, which limits reasonable hydrologic control of the ISR process fluids during the uranium recovery process. Without adequate control of the ISR process fluids, the required control of the lixiviant associated with the ISR process is not reasonably achievable. Without this, protection of public health, safety, and the environment under operational and post-operational conditions cannot be reasonably assured.

The State of Wyoming would likely require setback of ISR mining areas from historical underground and open pit mine workings in order to ensure that ISR recovery fluids are not lost due to preferential flow through historical workings. Because there are extensive historical underground and reclaimed open pit workings in the Project Area, application of ISR methods would not be practical technically or consistent with State of Wyoming requirements. This alternative was eliminated from further consideration.

2.6.2 Milling Alternatives

2.6.2.1 Alternative On-site Processing Facility Locations

Due to the relatively rugged topography and small amount of flat area within the WDEQ-LQD Permit to Mine 381C permit boundary, only two locations were considered for ore processing; the Proposed Action location and the Paydirt Pit area. The Paydirt Pit area is located near the proposed Congo Pit and the Sheep Underground decline portal. This area consists of fairly rougher terrain than the proposed processing facility location, and the proposed processing facility location overlaps more existing disturbed lands than the Paydirt Pit area. Also, the Paydirt Pit area consists of public lands managed by the BLM. In order to minimize new disturbance and grading costs, the proposed location was more amenable for a heap leach and processing facility. Also, transferring private lands to the DOE for long term care and maintenance is generally a much easier process than transferring federal lands to the DOE. For these reasons, this alternative was eliminated from further consideration.

2.6.2.2 On-Site Conventional Milling

Conventional milling involves crushing and grinding of ore to create sand-like material in a slurry, and tank leaching and tailings separation of solids and liquids using counter current decantation (CCD) tanks with tailings being pumped in a slurry to a lined disposal cell. Sulfuric acid would be used as the extraction solute (lixiviant) and SX would be the exchange process for stripping the uranium from the process solutions.

Conventional milling would require the addition of a screening and crushing circuit, leach tanks, and CCD circuit requiring additional land disturbances. This could result in additional impacts to visual resources and surface water from increased sedimentation and stormwater.

Although there is no heap leach pad under this conceptual alternative, a fully lined tailings disposal cell of equal or greater footprint (40 acres) would need to be constructed in or near the same location as the propose Heap Leach Pad. This tailings disposal cell would contain not only the 10 million tons of tailings but millions of gallons of tailings fluid that would maintain an operating head on the primary liner of many tens of feet rather than the few feet designed into the Heap Leach Pad. The Holding Pond for management of liquid wastes and process area stormwater would be retained under this conceptual alternative, but the Collection Pond and Raffinate Pond would be eliminated from the design. However, the tailings impoundment could contain a tailings pool (standing tailings liquid), which could be between 20 to 30 acres at peak operating conditions. There would be higher evaporative water loss (and commensurate water consumption to replace these losses) as well as greater opportunity for potential wildlife exposure. In addition, the increase operating head on the tailings cell liner would increase potential for impacts to groundwater from potential liner failure.

Conventional milling would require additional capital costs and increase operating costs due to increased labor and power requirements to operate the crushing, leaching, and CCD circuits. These increased costs would reduce the return on investment for Energy Fuels and its stockholders to the point where the economic viability of the Project would not be sufficient to attract investment capital. Because of the relative close location of an existing and fully permitted conventional mill (the Sweetwater Mill), Energy Fuels did not wish to pursue constructing an entirely new mill to complete the same milling activities that could occur at the Sweetwater Mill. For the reasons given above, this alternative was eliminated from further discussion.

2.6.2.3 Ablation Technology

Ablation is a new technique that separates uranium-bearing minerals from its host rock using high pressure water nozzles. In ablation, uranium-bearing ore is crushed and screened and mixed with water to form slurry. Slurry is pumped through opposing injection nozzles generating a high energy impact zone where the uranium-bearing minerals are detached from the host material. The resulting slurry stream is then screened or elutriated to separate uranium-bearing grains from the host rock grains. Further segregation of the grains through gravity separation decreases the size of the ore-bearing grains that would require further processing by approximately 95 percent. This technique has been recognized for quite some time but has not undergone enough testing to fully understand the associated impacts or cost effectiveness. Through rigorous testing and research, this technique might be utilized on future uranium mining projects, but due to the limited data available, ablation is not being analyzed as an alternative in this EIS.

2.6.3 Waste Management Alternatives

2.6.3.1 Liquid Waste Management Alternatives

2.6.3.1.1 Deep Well Injection

The focus of the liquid waste management alternative is on liquid process wastes potentially containing licensed material. It is estimated that the Proposed Action would produce approximately 50 gpm of liquid process waste stream to be managed and disposed of via evaporation in the holding pond with solid precipitates ultimately being disposed of in the heap (11(e)(2) byproduct material). Deep well injection is commonly used to dispose of liquid waste for ISR uranium operations that typically produce 150 gpm to 700 gpm.

Both disposal methods (evaporation or deep well injection) require the use of holding ponds or storage tanks prior to disposal and both methods are assumed to be equally durable and protective. There is minimal incremental benefit between the evaporative/heap disposal method and deep well injection. Energy Fuels is required by the NRC to design the Heap Leach Pad to withstand a major storm event (PMP). Because the holding pond is required, it would be used for evaporation under the Proposed Action. As a result, the cost of an injection well (or wells depending on individual well disposal capacity) would be in addition to that for the evaporation system. Therefore, this alternative was eliminated from further consideration.

2.6.3.2 Solid Waste Management Alternatives

2.6.3.2.1 In-Pit Tailings Disposal

The assessment of solid waste management alternatives is focused on alternative locations for tailings disposal because it is the most significant solid waste stream in terms of total volume, total radioactivity, and potential for air emissions and surface impacts. Under this alternative, the Congo Pit would be backfilled to approximately 6,825 feet above mean sea level (amsl) or approximately 25 feet above the groundwater surface. A new 40-acre double-lined disposal cell would be constructed on the floor of the partially backfilled pit. Tailings and other byproduct material from the decommissioning of the Ore Processing Facility would be trucked or conveyed to the new disposal cell in the Congo Pit. This alternative does not allow for deep burial of the tailings and byproduct material due to the shallow nature of the groundwater system in the area.

The final containment and reclamation of the heap is regulated by the NRC. DOE would provide long-term care responsibilities, but has no direct regulatory oversight rule. It is believed that the heap could not be replaced within the pit and meet NRC standards for mine tailings reclamation.

Through Energy Fuel's analysis and design efforts, it was determined that the tailings would be too close to the elevated water table around the Congo Pit to permit this area as an alternative disposal facility. There would be approximately 25 feet between groundwater and any lined impoundments within the pit increasing the risk of compromising groundwater quality. This alternative has the potential for adverse impacts associated with re-handling and transporting more than 10 million tons of tailing and non-tailing 11(e)(2) byproduct material for more than 1 mile to the in-pit disposal facility which results in additional human exposure to radiological materials, increases transportation risk, and the potential for atmospheric suspension of dust and radio particulates. This alternative would result in less potential groundwater protection in the event of future liner failure. Therefore, this alternative was eliminated from further consideration.

2.7 COMPARISON OF ALTERNATIVES

Table 2.7-1 provides a comparison of impacts associated with each of the alternatives.

Table 2.7-1
Comparison of Impacts

Resource	Proposed Action	BLM Mitigation Alternative	No Action
Amount of Disturbed Lands	Approximately 929 acres would be disturbed including 356.5 acres of new disturbance and 572.5 acres of re-use of previously disturbed area.	Same disturbance as the Proposed Action but better reclamation.	Some reclamation of existing disturbance may occur.
Climate and Air Quality	Air pollutant concentrations resulting from construction and operations would be in compliance with the National Ambient Air Quality Standards (NAAQS) and Wyoming Ambient Air Quality Standards (WAAQS). Impacts from operations would be below PSD Class II increments, with the exception of short-term (24-hour) PM_{10} and $PM_{2.5}$ impacts which could exceed PSD increments. Impacts would not exceed the PSD Class I or Class II increments at any of the nearby Class I and sensitive Class II areas. In addition, impacts to air quality related values (AQRVs) (visibility, atmospheric deposition of nitrogen and sulfur, sensitive lakes) would be below applicable threshold values.	Impacts would be similar to the Proposed Action.	Impacts would be less than the Proposed Action.
Geologic Resources	Most impact. Changes to physiography and topography of the Project Area as mining progresses would result in direct impacts. Potential impacts related to geologic hazards such as slope stability, subsidence, seismic and chemical hazards would be reduced by permitting and regulatory requirements.	Same as Proposed Action, but could have minor differences in the post-mine physiography due to the revised Reclamation Plan.	Least Impact. No change to physiography except those already anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.
Mineral Resources	Most impact. Direct impacts of the Project to mineral resources development are negligible because there are no directly overlapping proposals. Indirect impacts to mineral development could occur. The removal of 20 to 40 million pounds of uranium would occur.	Same as the Proposed Action, but additional mineral materials may be required if other areas outside of those identified for reclamation under the Proposed Action are determined to be reclaimed.	Least impact. No change in current mineral resource development and trends except those already anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.
Soils	Most impact. Disturbance of 929 acres across seven soil mapping units including 356.5 acres of new disturbance and re-use of 572.5 acres. Mixing of topsoil and subsoil could occur as	Same as the Proposed Action. Impacts may be less with implementation of the revised Reclamation Plan in accordance with the BLM Wyoming Reclamation Policy.	Least impact. Activities that would be conducted under Energy Fuels' reclamation plan in theWDEQ-LQD Permit to Mine 381C and the WDEQ-AML

Resource	Proposed Action	BLM Mitigation Alternative	No Action
	well as compaction resulting in direct impacts. Indirect impacts to soils could occur from wind and water erosion.	Mitigation Measures would further reduce impacts.	reclamation plan would positively benefit soils through the reclamation of currently disturbed areas.
Surface Water	Most impact. Disturbance within the Project Area could cause potential slight alternations of runoff patterns in ephemeral drainages resulting in indirect impacts. Potential for indirect impacts to surface water quality from sediment transport, spills and leaks, and dewatering discharge.	Same as the Proposed Action. Implementation of revised Reclamation Plan could provide more stable soils and less potential for erosion and sedimentation.	Least impact. No additional impact to existing surface water resources except those already anticipated as a result of existing reclamation plan in the WDEQ-LQD Permit to Mine 381C and the WDEQ-AML reclamation plans.
Groundwater	Most impact. Impacts to groundwater quantity and flow from mine dewatering and backfilling of the Congo Pit and Sheep Underground Mine. Impacts to groundwater quality through mineral oxidation and potentially spills and leaks.	Same as Proposed Action.	Least impact. No additional impacts to the existing groundwater resources except those already anticipated as a result of existing reclamation requirements and WDEQ-AML reclamation plans which includes partial reclamation of the McIntosh Pit which would eliminate evaporative loss of groundwater at the pit and reestablish the groundwater flow direction to the west rather than to the pit.
Water Use	No impact. May be reestablishment of flow-through drainages after reclamation.	Same as Proposed Action	No impact except those already anticipated as a result of existing reclamation requirements and WDEQ-AML reclamation plans.
Invasive, Non-Native Species and Noxious Weeds	Most impact. The Proposed Action would have the potential to allow establishment of invasive, non-native species and noxious weeds.	Same as the Proposed Action. Establishment of invasive, non-native species and noxious weeds would be reduced with implementation of Noxious Weed and Reclamation plans. Mitigation Measures would further reduce impacts.	Activities that would be conducted under Energy Fuels' reclamation plan in the WDEQ-LQD Permit to Mine 381C and the WDEQ-AML reclamation plan could potentially reduce invasive non-native species and noxious weeds.
Vegetation	Most impact. New disturbance of 356.5 acres of vegetation (including 115.5 acres of Limber Pine-Big Sagebrush type vegetation and 241 acres of Sagebrush-Grass type vegetation) and re-use of 572.5 acres of previously disturbed vegetation (including 49.5 acres of Limber Pine-Big Sagebrush type vegetation and 238.8 acres of Sagebrush-Grass type vegetation).	Less than Proposed Action. Long-term effects to vegetation could be reduced through implementation of a more stringent Noxious Weed Plan and revised Reclamation Plan dependent upon ecological sites and/or reference areas, reclamation potential, and area resource objectives. Mitigation measures would further reduce impacts.	Least impact. Activities that would be conducted under Energy Fuels' reclamation plan in the WDEQ-LQD Permit to Mine 381C and the WDEQ-AML reclamation plan would positively benefit vegetation through the reclamation of currently disturbed areas.

Resource	Proposed Action	BLM Mitigation Alternative	No Action
	Short-term, direct effects to herbaceous vegetation is expected. Direct effects to shrub-dominated and forest-dominated vegetation would persist for more than 10 years.		
Wetlands and Riparian Zones	Most impact. Although negligible impacts to riparian vegetation along Crooks Creek would be anticipated.	Same as Proposed Action but additional reclamation might provide for less potential for erosion and sedimentation, which could benefit riparian vegetation along Crooks Creek.	Least impact. No additional impacts to wetlands and riparian zones except those already anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.
Wildlife - ESA-Listed, Proposed, and Candidate Species	No impact to ESA-listed species (blowout penstemon or Ute ladies' tresses orchid). Most impact to greater sage-grouse. Potential indirect impacts to greater sage-grouse breeding, nesting, and early brood-rearing from March 15 through June 30 could occur by removal of habitat and increased noise. Potential impacts from corvids (nest predation and West Nile Virus).	Less than the Proposed Action. Impacts would be similar to Proposed Action but would be less due to the application of Mitigation Measures.	Least impact. Activities that would be conducted under Energy Fuels' reclamation plan in the WDEQ-LQD Permit to Mine 381C and the WDEQ-AML reclamation plan would positively benefit sage-grouse habitat through the reclamation of currently disturbed areas.
Wildlife - Migratory Birds	Most impact. Ground disturbance during peak nesting (May 15 to July 15) could result in nest abandonment, displacement of birds, and possible mortality of nestlings. Spatial and temporal limitations would lessen possibility of nest abandonment due to noise and human presence.	Less than the Proposed Action. Impacts would be similar to Proposed Action but could be less due to implementation of the Noxious Weed Plan, Travel Management Plan and Mitigation Measures.	No additional impacts other than those anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.
Wildlife - BLM and Wyoming Special Status Species	Most impact. Disturbance of 173.1 acres occupied by limber pine and 3.84 acres of mapped Rocky Mountain twinpod potential habitat. Bats may be affected during construction.	Less impact than the Proposed Action. Impacts would be similar to the Proposed Action but could be less due implementation of the Noxious Weed Plan, Travel Management Plan, and Mitigation Measures.	No additional impacts other than those anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.
Wildlife - General	Big Game and Trophy Game – Most impact. Direct impacts to Big Game animals would occur through removal of habitats. Increased potential for vehicle-related mortality and changes to animal movement patterns due to fences.	Less than the Proposed Action. Impacts would be similar to Proposed Action but could be reduced through implementation of Mitigation Measures.	No additional impacts other than those anticipated as a result of existing operator reclamation requirements and WDEQ-AML reclamation plans.

Resource	Proposed Action	BLM Mitigation Alternative	No Action
	Upland Game Birds, Small Game and Furbearers – Most impact. Direct impacts would occur through removal of habitats and increased traffic and an increased potential for effects from toxic and caustic compounds. Migratory Game Birds – Most impact. Potential impacts from exposure to chemicals used in the heap leach process. Non-Game Wildlife – Most impact. These impacts would be similar to those for Upland Game Birds, Small Game and Furbearers.		
Wild Horses and Burrows	Most impact. Removal of forage within the Green Mountain HMA (302 acres of new disturbance and re-use of 208 acres) and additional fencing (NRC Restricted Area).	Same as the Proposed Action. Although impacts could be less with implementation of the Noxious Weed Plan and Travel Management Plan.	Least impact. Some forage may be returned under current reclamation obligations.
Cultural Resources	Most impact. Although impact through destruction or loss of cultural resources considered to be low.	Same as the Proposed Action. Although Mitigation Measures would lessen any potential for unforeseen, or unanticipated impacts to cultural resources.	Least impact. Potential for impacting unidentified cultural resources during existing operator reclamation requirements and WDEQ-AML reclamation plans is minimized because activities would occur on existing disturbance.
Paleontological Resources	Most impact. Although impact through destruction or loss of fossils considered to be low.	Same as the Proposed Action. Although Mitigation Measures would lessen any potential for unforeseen, or unanticipated impacts to paleontological resources.	Least impact. Potential for impacting unidentified fossils during existing operator reclamation requirements and WDEQ-AML reclamation plans is minimized because activities would occur on existing disturbance.
Tribal and Native American Religious Concerns	No impact.	Same as the Proposed Action. Although Mitigation Measures would lessen any potential for unforeseen or unanticipated impacts to tribal and Native American religious resource concerns.	Least impact. Potential for impacting unidentified sites during existing operator reclamation requirements and WDEQ-AML reclamation plans is minimized because activities would occur on existing disturbance.
Socioeconomic	Moderate impact. Direct employment of 17 to 204 jobs per year during mining, and 6 to 26 jobs per year during closure. Secondary	Same as Proposed Action.	No impact.

Resource	Proposed Action	BLM Mitigation Alternative	No Action
	(indirect and induced) employment of 3 to 32 jobs per year during mining, and 3 to 5 jobs per year during closure. Potential population increase of 269 to 325 residents in Fremont and Carbon counties over 5 years. Fiscal impacts would include severance tax revenue to the State of Wyoming, property tax revenue to Fremont County, and sales tax revenue to counties and the state.		
Environmental Justice	No disproportionate impact to minority or low-income populations.	Same as Proposed Action.	No impact.
Transportation/Access	Most impact. Increase in vehicle trips on affected roadways peaking between 40 and 61 vehicle round-trips per day during construction and between 55 and 107 vehicle round-trips per day during operations.	Same as the Proposed Action but impacts could be decreased with development of a Travel Management Plan to better manage and control access.	Least impact. Some existing roads would be reclaimed due to current obligations under existing permits.
Radiological Exposure	Radiological effects would be governed by the regulating authorities (i.e., NRC, EPA, MSHA) and would be limited to those allowed by the applicable laws and regulations.	Same as the Proposed Action.	No impact.
Hazardous Materials and Waste	No impact other than from incidental spills.	Same as the Proposed Action.	No impact.
Recreation	Most impact. Direct impacts to recreationists could occur through removal or restriction of areas currently used for hunting within the Project Area. No impact to developed recreational facilities.	Less impact than the Proposed Action. Development of the Travel Management Plan could lessen impacts to recreational users.	Least impact. Opportunities for recreational users would increase as the area becomes less industrialized and wildlife habitat increases with reclamation, creating better opportunities for hunters.
Livestock Grazing	Most impact. Direct impacts to permittees could occur through removal of forage from 356.5 acres of new disturbance and re-use of 572.5 acres of previously disturbed areas across two grazing allotments (Mountain Allotment and Crooks Gap Allotment). No impact to range improvement sites. Potential for cattle to fall into the Congo Pit.	Less impact than the Proposed Action. Impacts could be less through implementation of the revised Reclamation Plan Increased forage could be available with implementation of a Noxious Weed Plan. Fencing of the Congo Pit highwalls would more effectively decrease potential falls, entrapments, or other impacts to livestock.	Least impact. Reclamation of existing operator reclamation requirements and AML reclamation plans could increase available forage in the Project Area.

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